



ANNUAL REPORT

2023-24



INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

An Autonomous Institute Under Department of Science & Technology

Govt. of India

Paschim Boragaon, Garchuk, Guwahati 781035, Assam

ANNUAL REPORT 2023-2024



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CONTENTS

Foreword	1
Research Output at a Glance	7-8
IASST Committees	10-14
The Governing Council	10
Scientific Advisory Council	10
Finance Committee	11
Building Works Committee	11
Institutional Biosafety Committee	11
Institutional Ethics Committee	12
Institutional Animal Ethics Committee	13
Editorial Board for Annual Report	13
Other Officials of IASST	14
Institutional Manpower	16-22
Physical Sciences Division	16
Life Sciences Division	18
Administration and Accounts	20
Engineering and Estate Management	22
Sophisticated Analytical Instrument Centre	22
Knowledge Resource Centre	22
Information Technology Cell	22
IASST Consultants	22
Research Activities	23-134
Physical Sciences Division	24
Advanced Material Sciences(PSD-1)	24-58
Basic and Applied Plasma physics (PSD-2)	59-67
Mathematical and Computational Sciences (PSD-3)	68-77
Life Sciences Division	78-127
Biodiversity and Ecosystem Research (LSD-1)	80-100
Traditional and Modern Drug Discovery and Disease Diagnosis (LSD-2)	101-127
Interdisciplinary Research	128-134
Facilities of IASST	135-146
Academic Activities	147-155
Photo Gallery	156-161
Azadi Ka Amrit Mahotsav	162-170
Major Events	171-195
Media Reach	196-203
Financial Statements	204-283



I am delighted and gratified to foreword the Institute of Advanced Study in Science and Technology's (IASST) annual report for the fiscal year April 2023–March 2024. This work provides us renewed joy each year as we reflect on our progress and accomplishments. India's rise in the global S&T indices demonstrates the country's growing reputation in science, technology, and innovation. This achievement is reinforced by revolutionary initiatives launched by the Indian government, including the National Education Policy (NEP).

At IASST, the continual augmentation of pioneering scientific ideas and technological marvels remains our foremost pursuit. This focus has enabled us to explore new frontiers in research and innovation, ensuring that modern science and technology play a pivotal role in addressing national and global societal challenges. As an autonomous research institute under the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India, IASST has thrived at the forefront of basic and applied research, cultivating a scientifically aware population. We aim to connect laboratory research to practical applications to boost our advanced nation's future. This report describes the numerous accomplishments and developments gained from 2023 to 2024.

The IASST community is a vibrant and dynamic cohort that includes 43 female and 49 male Ph.D. students and 27 project students, all of whom do research under the supervision of 21 dedicated faculty members. Our students are admitted through the All India Competitive Examination of IASST, and Junior Research Fellows (JRFs) follow established standards to enroll in the AcSIR Ph.D. Program. The Institute's leading position in research is demonstrated by its excellent list of academic output, which comprises 97 research articles in peer-reviewed national and international

FOREWORD

journals with an average impact factor of 4.46.

The citations and quality of our research papers have markedly increased during this period. Additionally, our faculty has published numerous books and book chapters. IASST has produced 13 Ph.D. degrees and trained 49 project students, including Masters and B.Tech interns. The core administrative team comprises 73 members, including technical and contractual staff. We have expanded our academic and research activities by signing memoranda of agreement (MoAs) with several educational institutions. Our faculty has secured 18 extramural research projects amounting to Rs. 35,375,464. To protect our intellectual property and in alignment with the self-reliant India (Atmanirbhar Bharat) initiative, our faculty has developed numerous technologies, filing ten patents, with seven granted during this period. Our research scholars and faculty members have received several awards and accolades, detailed in this report, during this period.

Fostering a scientifically conscious community within our campus and beyond and disseminating knowledge have been fundamental duties of IASST. We have conducted multiple seminars to train students and instructors from various parts of the North East. We've also held seminars, invited lecturers from renowned worldwide academics, and run essential awareness campaigns on regional issues like mushroom cultivation and bio-entrepreneurship development.

Significant achievements include our extensive women empowerment programs in the three villages adopted by IASST in the Rani area under the Kamrup district. We have focused on generating new livelihoods in rural areas, training women broadly to transform their indigenous knowledge of making ethnic delicacies into successful commercial ventures. Our training workshops on bio-floc technology for fish rearing and optimizing nutritional values with a competitive market approach for Xindol production have been success stories. Another commendable achievement recognized in regional media is the commercialization of Sheedal in the Karimganj district of Assam. Our scientists have worked with the Kaibarta community of Sonbeel to bring the local delicacy to market shelves, thereby generating livelihoods for the community. Our commitment to societal development has been well demonstrated through our extensive scientific teaching sessions in some of the most remote regions of Assam.

The Institute displayed immense enthusiasm in implementing and promoting Hindi as the official language in all settings, offering language diversity and inclusivity. As such, IASSTians have launched an enlightening initiative by publishing a quarterly scientific magazine, "Vigyan Chetna," starting in June. The publication, primarily in Hindi and other regional languages, is poised to become an invaluable platform for research scholars and scientists to articulate their research findings, share their insights, and present their creative approaches to scientific inquiry. The IASST fraternity has enthusiastically observed significant national and regional days such as Independence Day, Republic Day, DST Foundation Day, IASST Foundation Day, National Science Day, Unity Day, Hindi Diwas, and Swachhata Pakhwada. IASST also hosted a national-level DST Conclave to bring together directors and heads of all AIs to collaborate on S&T efforts and enhance India's prowess in innovation and scientific advancements. Additionally, an international symposium on snakebite- 'SnakeSymp 2024', was organized to bring together

doctors, academicians, and industry stakeholders to combat the globally recognized issue of snakebite deaths.

IASST established the B. R. Ambedkar Centre for Societal Empowerment (BRACE) with state-of-the-art facilities to provide specialized training for marginalized communities during this period. BRACE aims to uplift these communities through skill development, educational initiatives, and awareness campaigns, demonstrating IASST's commitment to positive social change and grassroots empowerment. Additionally, the near-completion of the Women's Hostel will soon allow for the accommodation of more women scholars, fostering greater inclusion and diversity within the academic community.

Our achievements would not have been possible without our stakeholders' constant support and cooperation. I want to take this opportunity to express my heartfelt gratitude to the Department of Science and Technology, Government of India, the Secretary of DST, members of the Governing Council (GC), the Scientific Advisory Committee (SAC), the Head of the AI Division, the Finance Office of DST, and the academic and administrative committee members for their invaluable cooperation and coordination. With the unwavering passion and commitment of all IASST members, we realized the Institute's goal, vision, and objectives.

Ashis K. Mukherjee, Ph.D., D.Sc., FASc
Director

RESEARCH OUTPUT AT A GLANCE



RESEARCH OUTPUT AT A GLANCE

The IASST scientific community greatly emphasizes publishing high-quality scientific research in science and technology. The outcomes of scientific research are disseminated through various channels, including peer-reviewed journals, filed patents, and technology transfer. In 2023-24, a total of 97 research papers with an average impact factor of 4.46 were collectively published in peer-reviewed journals from both the life science and physical sciences divisions of

IASST (Fig. 1). Researchers at IASST are dedicated to addressing real-world challenges to keep up with the expanding frontiers of knowledge and global advancements. The institute's leading position in research is evident from its impressive research outputs during this period. The Physical and Life Sciences Division of IASST published quality research papers during the reporting period (Fig. 2).

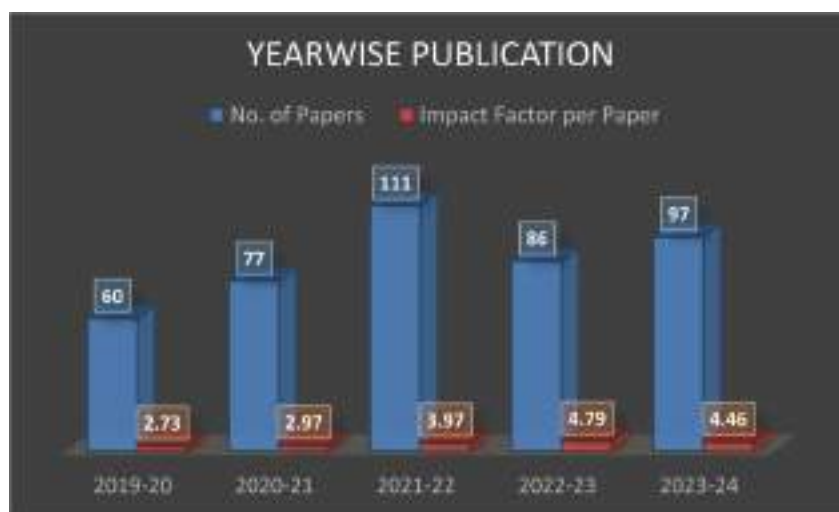


Fig. 1

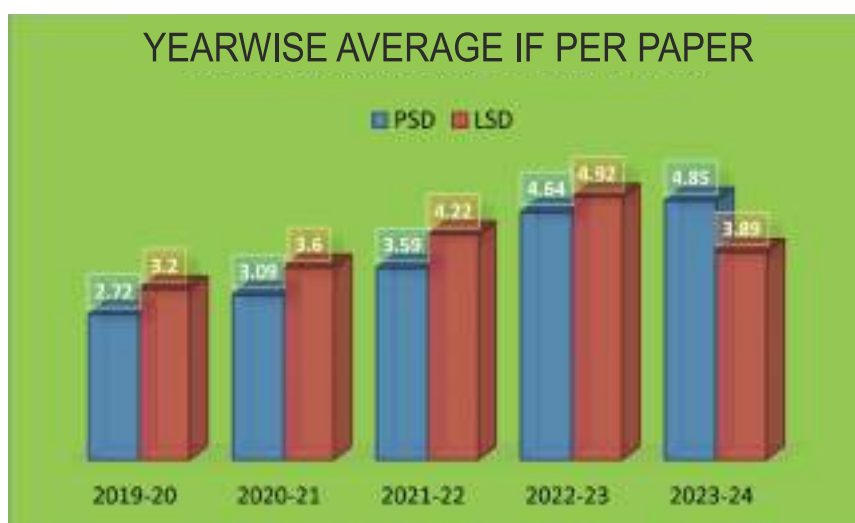


Fig. 2

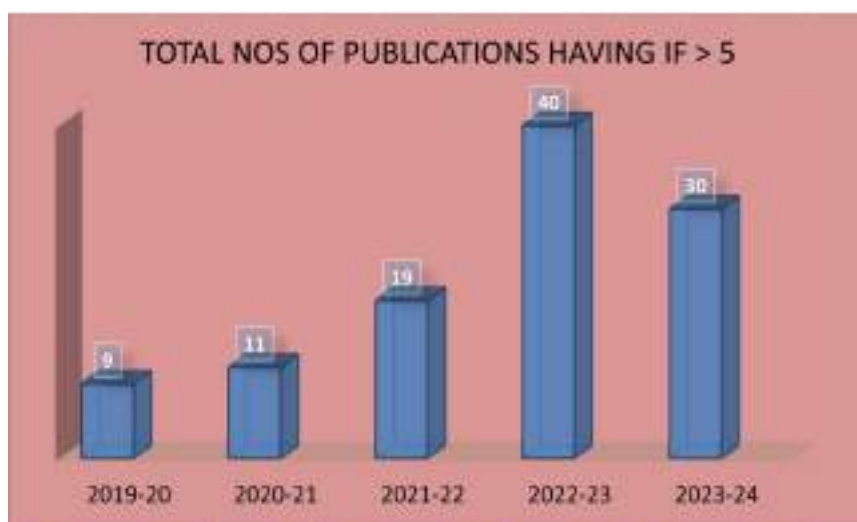


Fig. 3

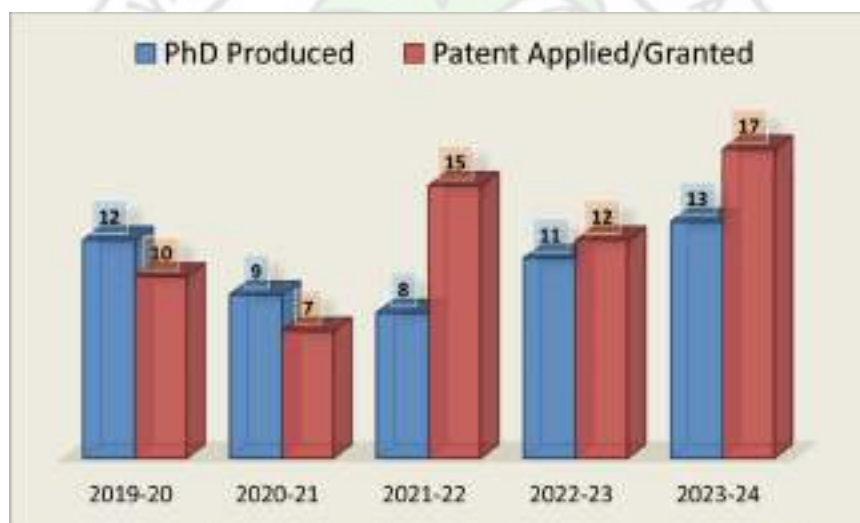


Fig. 4

As a premier research institute in the northeastern region of India, IASST is committed to consistently publishing high-quality research in reputable journals for an extended period. In 2023-2024, IASST had an impressive publication list with thirty papers

having an impact factor greater than 5, covering all major research domains (Fig. 3). Additionally, the number of Ph.Ds. produced increased in 2023-2024. The number of granted/applied patents increased from 12 last year to 17 in 2023-2024 (Fig. 4).

The background is a deep blue gradient. In the top right corner, there is a cluster of overlapping hexagons in various shades of blue, some with internal lines. In the bottom half, there is a stylized city skyline with various skyscrapers. Overlaid on the city and the background are glowing blue lines and circles, suggesting a global network or data flow. A bright blue horizontal line runs across the bottom of the image.

IASST COMMITTEES

THE GOVERNING COUNCIL (GC)

Dr. Srivari Chandrasekhar, Secretary, DST, GoI, New Delhi	Chairperson (01-04-2023 to 10-07-2023)
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Dr. Arun Kumar Sarma, DG, NECTAR, Shillong	Member
Prof. Pulok Kumar Mukherjee, Director, IBSD, Imphal	Member
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Prof. Ashis K. Mukherjee, Director, IASST, Guwahati	Member Secretary

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Mr. Pradyut Borkataki, Finance & Accounts Officer, IASST, Guwahati	Member Secretary (ex-officio)

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Prof. Anjan Dutta, Dept. of Civil Engineering, IITG	Member
Prof. Arup Ratan Pal, PSD, IASST	Member
Dr. Diganta Goswami, Registrar, IASST	Member Secretary

INSTITUTIONAL BIOSAFETY COMMITTEE (IBSC)

The current Institutional Biosafety Committee (IBSC) of IASST is registered (Registration No. RS/4219) under RCGM Secretariat, Department of Biotechnology, Ministry of Science & Technology, Govt. of India. The committee is constituted of the following members.

Prof. Ashis K. Mukherjee, Director, IASST, Guwahati	Chairman
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Prof. Probodh Borah, College of Veterinary Science, Assam Agricultural University, Guwahati	Outside Expert
Dr. Pranita Saikia, Chief Consultant, GNRCH, Dispur, Guwahati	Biosafety Officer
Prof. M. R. Khan, Life Sciences Division, IASST, Guwahati	Internal Member

Prof. Jagat C. Borah, Head, Life Sciences Division, IASST, Guwahati	Internal Member
Dr. Vijay Kr. Singh, Asstt. Professor-II, Life Sciences Division, IASST, Guwahati	Internal Member
Dr. Debajit Thakur, Associate Professor-II, Life Sciences Division, IASST, Guwahati	Member Secretary

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Ms Sabita Das Ahom Gaon, Garchuk, Guwahati	Member
Prof. M. R. Khan, PhD, Life Science Division, IASST Secretary	Member

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Dr. Sunayana Barua Veterinary Doctor, IASST	Veterinarian
Dr. Birendra Nath Bhattacharyya	Main Nominee
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INSTITUTIONAL MANPOWER

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Director

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Angana Das Mahapatra	JRF
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Hirakjyoti Sarma	JRF
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Dr. Yunus Sheikh	Research Associate
Dr. Aparup Patra	Institutional PDF
Sagar Ramrao Barge	SRF
Paramita Choudhury	SRF
Swarnali Bhattacharjee	SRF
Barsha Deka	SRF
Nonibala Gurumayum	UGC-SRF
Himangshu Sarma	SRF
Partha Pratim Sarma	SRF
Puspanjali Khound	ICMR-SRF

Deepsikha Swargiary	JRF
Pranamika Sharma	JRF
Semim Akhtar Ahmed	JRF
Mridusmita Barman	JRF(IASST-Deakin)
Gurumayum Shalini Devi	JRF (DST-INSPIRE)
Devi Basumatary	CSIR-JRF
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Sumi Pait	Project Associate-I
Dipu Barman	Technical Assistant
Plabita Baruah	Technical Assistant
Abhipsha Saikia	JRF
Liza Changkakoti	JRF
Ratul Chakraborty	CSIRUGC-NET JRF
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Sheezana Gautam	Project Associate-I
Srikanta Baishya	MTS
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Dr. Debajit Thakur	Assoc. Prof.-II
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Dr. Yunus Sheikh	Sr. Research Associate.
Dr. Tulsi Joishy	Sr. Research Associate.
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Tomali Sinha	CSIR- JRF
Somarani Dash	DBT/CSIR-JRF
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Santhousa Boro	Laboratory Assistant
Chehnaz Sultana	Laboratory Assistant
Pranjit Das	Laboratory Assistant
Kantak Deori	Field Worker
Tribeni Das	Project Assistant
Khomdram Niren Singh	Project Associate-I
Hirokijyoti Das	Laboratory Assistant
Ipsah Akhtar	Inst. JRF
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Manomohan Huzuri	Technical Assistant
Dipankar Kalita	Technical Assistant
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Prof. Neelotpal Sen Sarma	Professor I
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Pradyut Barkataky	FAO
Rajesh Sharma	PRO

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Rabin Ch. Kalita	Section Officer (Admin.)
Ramen Mahanta	Superintendent
Dwijendra Deka	Superintendent
Lelin Gogoi	Superintendent
Diganta Das	Assistant
Prabhat Ch. Barma	Assistant
Kumud Baishya	Assistant
Hemanta Sarma	Assistant
Indrajit Sarma	Assistant
Nimai Hazam	Driver
Lachman Thapa	Driver
Lakshmi Kanta Soud	MTS
Madhabi Das	MTS
Satish Ch. Das	MTS
Niren Sarma	MTS
Bipul Kr. Das	MTS
Pradip Das	MTS
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Moonmee Deka	Assistant (Accounts)
Rabindra Kalita	Assistant (Accounts)
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Bimal Das	Driver
Prakash Kr. Kachari	Field Supervisor
Madan Kr. Das	MTS

ENGINEERING AND ESTATE MANAGEMENT

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Uddipta Deka	MTS
Kumud Patgiri	MTS

TEMPORARILY ENGAGED PERSONS

Md. Mahammad	JE (Civil)
Bikash Jyoti Das	JE (Elect)
Muktaram Kumar	Work Supervisor
Dijoraj Roy Choudhury	Plumber
Anima Baishya	Cleaner
Ajay Baishya	Mali

SOPHISTICATED ANALYTICAL INSTRUMENT CENTRE (SAIC)

Dr. Sarathi Kundu	Associate Professor-II & Head SAIC
Dr. Nirab Chandra Adhikary	Technical Officer-B
Ms. Juri Pathak	Technical Officer-A
Ms. Julie Bordoloi	Technical Assistant-II
Mr. Subrata Goswami	Technical Assistant-I
Mr. Manomohan Huzuri	Technical Assistant-I
Mr. Dipankar Kalita	Technical Assistant-I

TEMPORARILY ENGAGED PERSONS

Mr. Nayan Talukdar	Technical Officer (Instrumentation)
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KNOWLEDGE RESOURCE CENTRE

Dr. Tarini Dev. Goswami	Assistant Librarian & i/c KRC
Ratul Baishya	MTS

Temporarily Engaged Person

Subhrajit Sengupta	Technical Assistant
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INFORMATION TECHNOLOGY CELL

Bijuphukan Bhagabati	Technical Officer-A and i/c IT Cell
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Temporarily Engaged Person

Debajit Deka	Network Administrator
Rajlochan Baruah	Jr. Network Administrator

IASST CONSULTANTS

Dr. Dhruva Sharma	Consultant (Academic affairs) (Till 14 th February, 2024)
Dr. Anjali Verma	Consultant Medical Officer
Dr. Jutika Devi	Consultant (Academic affairs)



RESEARCH ACTIVITIES



PHYSICAL SCIENCES DIVISION

RESEARCH ACTIVITIES

Natural science is a significant branch that tries to explain and predict nature's phenomena based on empirical evidence. Physical science is a branch of natural science that studies non-living systems. As we all know, in natural science, hypotheses must be verified scientifically to be regarded as scientific theory, and scientists do research for this purpose.

In the Physical Sciences Division of IASST, scientists of three distinct research areas, namely, Basic and Applied Plasma Physics (BAPP), Advanced Material Sciences (AMS), and Mathematical and Computational Sciences (MCS), work together. In Basic and Applied Plasma Physics, research is going on to study waves and instabilities in multi-component plasma, dusty plasma, and cold atmospheric plasma (CAP) for biophysics and biomedical applications, including the effect of CAP on protein/peptide self-assembly and its effect in wound healing process.

The Advanced Materials Sciences group of IASST is actively engaged in developing materials useful for applications like photovoltaic and photocatalytic applications, synthesizing IR transparent carbon-based conducting films, rubrene-based organic

pyrophototronic flexible nanogenerators, transparent and super hydrophilic flexible protein films with anti-fogging and self-cleaning properties, self-assembled p-n homojunction nanosheets with photoelectrocatalytic activities, biopolymer-based formulation for robust and active food packaging material, optical sensing platform for the detection of anti-cancer drugs using a phosphorene-based composite, reduced graphene oxide quantum dots based smart sensors for bio and chemo analytes, efficient CO₂ absorption and remediation of pollutants dyes, so forth.

In Mathematical and Computational Sciences, research is going on queueing theory, medical image processing and pattern recognition, hydro elasticity, and wave structure interaction, including the prediction of Indian Summer Monsoon Rainfall (ISMR) using Artificial intelligence (AI) and Machine Learning (ML) for early warning and better preparation to minimize potential damage. They also simulate ocean surface wave propagation triggered by different types of submarine earthquakes and volcanic eruptions that could generate tsunami waves.

PSD-1 ADVANCED MATERIAL SCIENCES

The Advanced Material Sciences group of IASST is dynamically involved in the experimental design and computational study of various types of materials, such as polymer nanocomposites, fluorescent materials, hybrid

nanomaterials, photonics materials, metallic alloys and structural materials, energy-efficient semiconductor materials, and other functional materials for a wide range of applications, including sensors, optoelectronic,

bioelectronics devices, photodetector, packaging technology, energy applications, and other applications. A quick summary of the actions completed during the past year is provided below.

A. Advanced Materials Lab

Coordinator: Prof. N. Sen Sarma

A.1. An optical sensing platform for the detection of anticancer drugs and their cytotoxicity screening using a highly selective phosphorene-based composite

Monitoring therapeutic drugs and their elimination is crucial because they may cause severe side effects on the human body. Methotrexate (MTX) is a widely used anticancer drug, which is highly expensive and has a toxic effect on the lungs, stomach, and heart. In addition, the detection of unwanted overdoses of MTX using traditional procedures is time-consuming and involves complex instrumentation.

Here, a new highly fluorescent material with exceptional optical properties has been developed using phosphorene, cystine, and gold (Ph-Cys-Au), which can be used as a visual sensing platform for detecting MTX overdose. This non-enzymatic approach for the detection of anticancer drug Methotrexate can help cytotoxicity screening for therapeutic analysis (Fig. 1).

The developed sensing platform outperforms all former systems as the materials are biocompatible with an appreciable detection limit. The material shows a detection limit of about 0.0266 nM (for a linear range of 0–140 μ L) and 0.0077 nM (for a linear range of 160–260 μ L). Moreover, the nanocomposite exhibited in vitro cytotoxicity towards cancerous cells, but it was non-cytotoxic for non-cancerous cells.

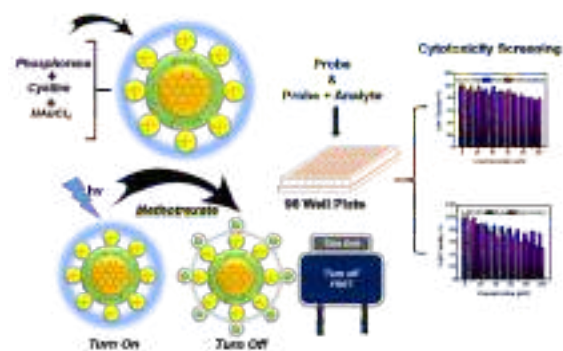


Fig. 1. Schematic representation of the interaction of the probe with analyte via FRET mechanism for Optical Sensing and Detection of Anticancer Drug.

A.2. Reduced graphene oxide quantum dots-anchored biopolymer composite as a smart sensing platform for fluorescent and electrical sensing of Rifampicin

This study involves the green synthesis of reduced graphene oxide quantum dots (rGQDs) using cotyledon extract of *Adiantum Pinnatifidum* seed and their application as a multimode sensor system following cost-effective fabrication strategies. Cot-rGQDs possess excellent photoluminescence properties and exhibit an electrical sensing response in the presence of Rifampicin (RFP), which is utilized to fabricate a fluorescence sensor and a flexible electrical device to monitor RFP. The biodegradable flexible device shows a considerable increase in current conductivity with an increasing concentration of RFP, and this facilitated the construction of a fluorescent smart sensor using a handmade UV chamber and mobile phone accessories. The intelligent sensor operates in a simple technical way, where sensing images are captured using a smartphone camera and analyzed in terms of RGB value. In this sensor system, cost-effectiveness is more pronounced as the sensor is fabricated using cheaper, readily available materials (Fig. 2).

Moreover, the biodegradability of the material used for making prototypes of electronic devices leads to a valuable contribution to controlling

environmental e-waste pollution. The selectivity of the sensor system is satisfactory over a wide range of interfering agents, including antibiotics, biomolecules, and ions. The practical applicability of the sensor was tested using three different real media, and similar sensitivity was found in the detection of RFP.

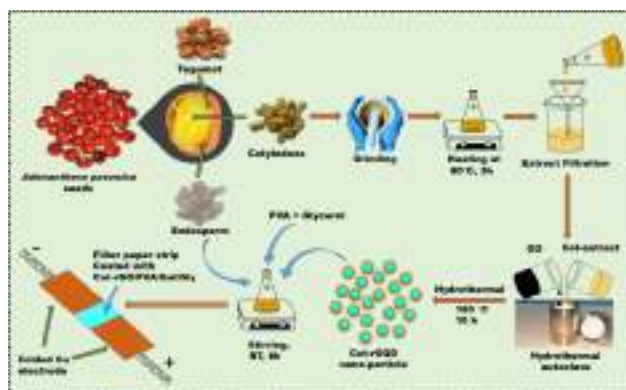


Fig. 2. The extraction procedure of cotyledon from *Adenanthe-ravonine* seeds and the preparation of Cot-rGQD using Cot-extract. The fabrication of an electrical device based on Cot-rGQD anchored Gal/PVA/Gly biopolymer composite coated on the surface of a cellulose filter paper strip is demonstrated pictorially.

A.3. Development of p-n heterostructures using phosphorene and SnO₂: Its efficacy toward the adsorption study of CO₂ and rose Bengal dye

A phosphorene-metal oxide composite was successfully synthesized here by adopting a simple hydrothermal approach followed by different analytical techniques to check the synthesis process. Based on their property, we have opted to study their adsorption efficiency towards gas and dye. It has been observed from BET analysis that the synthesized material is microporous and shows a surface area of about 127.44 m²/g with a total pore volume of 0.113 cm³/g. Therefore, we have checked its adsorption efficacy for CO₂ and rose bengal dye and studied three different isotherm models to understand the adsorption pattern. We have also calculated the CO₂ uptake according to the mass

balance principle of the ideal gas equation, which was about 21.478 mol/kg. Therefore, it is concluded that the material shows good efficiency towards CO₂ adsorption. The systematic study of the dye adsorption kinetics and isotherm models of rose bengal dye with the prepared composite material indicates that the adsorption is inclined towards physisorption (Fig. 3). This information will help to develop more p-n heterostructures to be carried out for dye as well as gas adsorption studies. This work is also featured as a cover article for the journal ACS Langmuir.

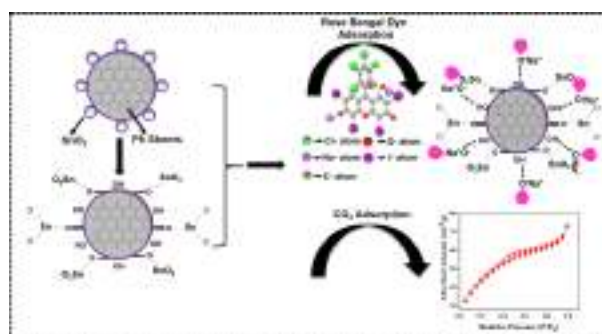


Fig. 3. Schematic representation of adsorption study of rose Bengal dye and CO₂.

B. Material Nanochemistry Laboratory Coordinator: Prof. D. Chowdhury

B.1. Ag Nanoparticle incorporated Guar gum-Sodium alginate-i-carrageenan tri-biopolymer blended cloth waste lint extracted cellulose nanocrystal antimicrobial composite film

In response to growing environmental awareness, biopolymers are increasingly being explored and adopted as an alternative packaging material to alleviate the environmental impact of traditional petroleum-based polymers. In this work, a biopolymer-based formulation for robust and active food packaging material was developed. This material consisted of a blend of three biopolymers (guar gum-sodium alginate-i-carrageenan) reinforced by cellulose

nanocrystals (CNC) alongside the integration of silver nanoparticles (AgNPs) with varying sizes. The CNC used in this process was derived from cloth waste lint (CWL) from a household cloth dryer machine. CNC and AgNPs were incorporated into the tri-biopolymeric blend matrix to construct a nanocomposite film with excellent tensile strength (~ 90 MPa). The nanocomposite film also exhibited antimicrobial activity against *Escherichia Coli*

ATCC 25922 and *Bacillus Cereus* MTCC 1272. The practical applicability of such film was also demonstrated by applying it to sliced bread, and the enhancement of the shelf life of the wrapped bread was compared with that of a control. Thus, guar gum-sodium alginate-i-carrageenan tri-biopolymer blend with cloth waste lint extracted cellulose nanocrystal composite film is an antimicrobial candidate for active packaging films (Fig. 4).

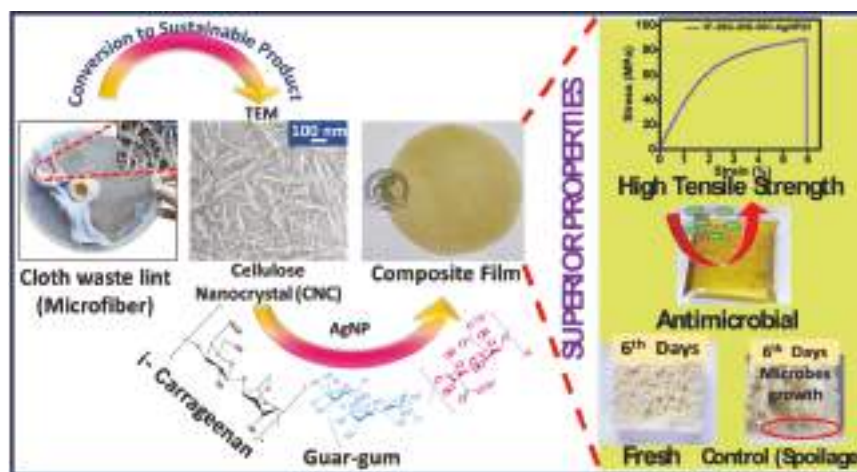


Fig. 4. Schematic representation demonstration of fabrication of Ag Nanoparticle incorporated Guar gum-Sodium alginate-i-carrageenan tri-biopolymer blended cloth waste lint extracted cellulose nanocrystal antimicrobial composite film and its superior properties.

B.2. Structural Modification in Au-MoS₂ Quantum Dot Composites for Improved Catalytic Efficiency in p-Nitrophenol Reduction

Au-MoS₂ Quantum Dots (QDs) composites are ideal catalysts for several reactions, including reducing p-nitrophenol (p-NP). However, the structural role of Au-MoS₂ QDs composites on their catalytic efficiency has never been investigated. In this work, a comparative study is done to examine the catalytic reactivities of gold nanorod-molybdenum disulfide quantum dots (AuNR-MoS₂ QDs) composite and gold nanosphere-molybdenum disulfide quantum dots (AuNS-MoS₂ QDs) composite. The catalytic efficiency of the as-prepared composites is then investigated to reduce p-nitrophenol, which is taken as the model

reaction. The kinetics of the catalytic reduction of p-nitrophenol reveal that the AuNR-MoS₂ QDs composite demonstrates the highest catalytic efficiency, having a rate constant of 0.06 min^{-1} , compared to the AuNS-MoS₂ QDs composite, AuNR, and AuNS, having rate constant of 0.023 min^{-1} , 0.021 min^{-1} and 0.008 min^{-1} , respectively. The possible mechanism is also discussed in the paper. Finite Difference Time Domain (FDTD) simulation was carried out to simulate the electric field intensity of AuNR-MoS₂ QDs composite, AuNS-MoS₂ QDs composite, AuNR, and AuNS show increased electric field intensity for AuNR-MoS₂ QDs composite and AuNS-MoS₂ QDs composites. Therefore, this study emphasizes understanding the structural role of catalysts and hence helps in designing efficient catalysts (Fig. 5).

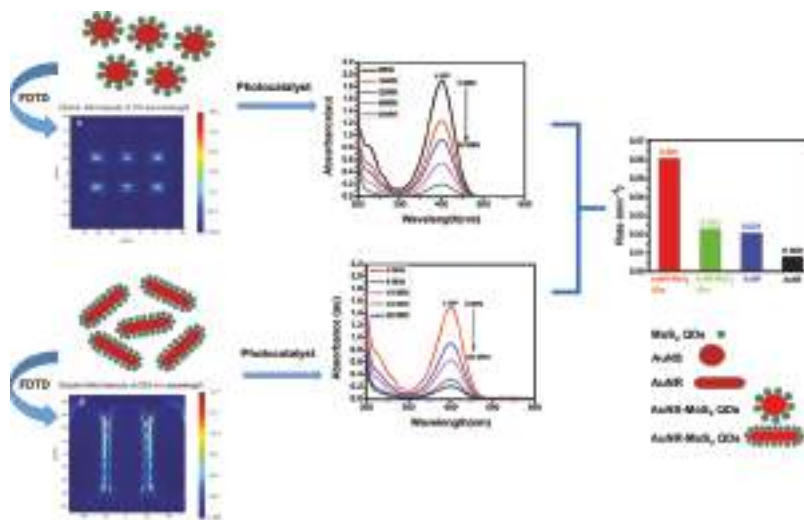


Fig. 5. Schematic representation depicting the catalytic efficiency of gold nanorod-molybdenum disulfide quantum dots (AuNR-MoS₂ QDs) composite and gold nanosphere-molybdenum disulfide quantum dots (AuNS-MoS₂ QDs) composite and Finite Difference Time Domain (FDTD) simulation done on the composite.

B.3. Cobalt substituted ZnS QDs: A diluted magnetic semiconductor and an efficient photocatalyst

Understanding the origin of induced magnetic characteristics in transition metal atoms doped QDs recently has been a significant focus due to the potential applications in spintronic devices.

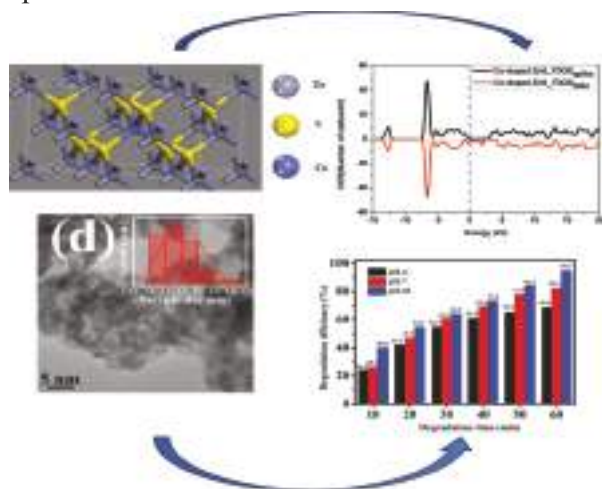


Fig. 6. Schematic representation of Cobalt substituted ZnS QDs and its catalytic properties.

A detailed experimental and theoretical investigation has been conducted to understand

the physical properties of Co-doped ZnS QDs containing different weight percentages of Co atoms [Co_xZn_{1-x}S (x = 0.00, 0.03, 0.06 and 0.09)], prepared via chemical co-precipitation techniques. The observed weak ferromagnetic behavior in the doped samples was due to p-d hybridization between 3d levels of Co²⁺ ions and the 3p levels of S²⁻ ions of the host ZnS QDs. Hysteresis loops obtained at room temperature validated this weak ferromagnetic nature supported by DFT calculations (Fig.6).

C. Plasma-Based Synthesis of Nanomaterials Coordinator: Prof.A.R. Pal

C.1. Plasma-based synthesis of vertically aligned MoS₂ nanostructures for optoelectronic applications

This work shows the deposition of a few layered molybdenum disulfide (MoS₂) nanostructures in vertical orientation through a plasma-based synthesis process called magnetron sputtering. Herein, heating the glass substrate during deposition plays a major role in altering the growth orientation and morphology of MoS₂. Due to heating, the growth initiates with the layer-by-layer stacking, forming MoS₂ islands (Fig. 7). These islands merge into a few

layered vertical standing flakes as deposition time increases. These synthesized structures enhance the light absorption efficiency and may facilitate rapid charge transport, resulting in a fast response from the photodetector devices. This controlled and uniform growth of vertically oriented MoS_2 nanostructures holds significant promise for application in electronic devices like field effect transistors (FETs) and optoelectronic devices like photodetectors. Further, these vertically oriented 2D nanomaterials also provide a large surface area for the active sites of hydrogen evolution reaction. This makes them a promising candidate for energy conversion and

storage device applications.

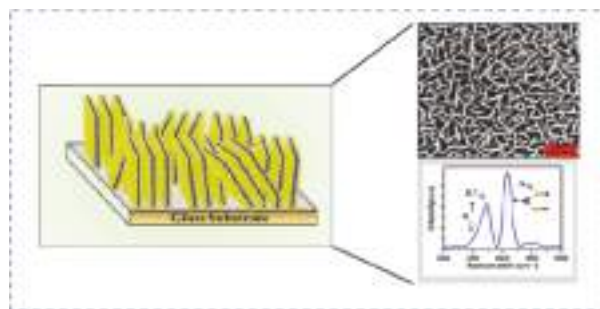


Fig. 7. Schematic of vertically aligned MoS_2 nanomaterials on a glass substrate, FESEM image, and Raman spectrum of the synthesized structure.

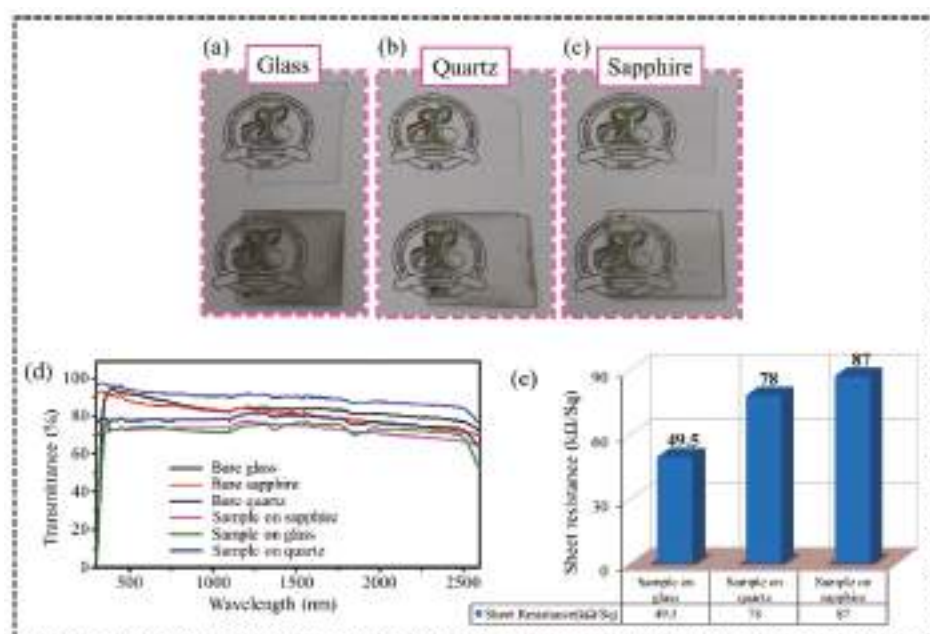


Fig. 8. Photographic images, transmittance spectra, and sheet resistance of the carbon-based films on glass, quartz, and sapphire substrates.

C.2. Synthesis of IR transparent carbon-based conducting films

Transparent conducting films (TCFs) are essential for optoelectronic devices, providing a blend of optical transparency and electrical conductivity. Metal oxide thin films like ITO and FTO are commonly used and offer excellent optical transparency in the visible spectrum but lose transparency in the NIR or IR region.

Carbon-based conducting films (CBFs) such as CNTs and Graphene are considered emerging alternatives. This study synthesized CBFs without requiring catalysts using atmospheric pressure glow discharge plasma-enhanced chemical vapor deposition (AP-PECVD), a cost-effective method. The resulting CBFs show favourable properties, balancing IR-transmittance and conductivity. Samples

deposited on various substrates (glass, quartz, and sapphire) show uniform IR transparency and commendable sheet resistance (Fig. 8). The recorded transparency values for CBFs on glass, sapphire, and quartz substrates ranged from 70% to 79% in the 400-2500 nm wavelength range. Among the mentioned peers, CBF on glass substrates exhibits the lowest sheet resistance value of 49.5 k Ω /Sq. Compared to CBF on quartz (78 k Ω /Sq) and sapphire (87 k Ω /Sq). These findings highlight the potential of AP-PECVD synthesized CBFs for various optoelectronic applications requiring transparency and conductivity.

C.3. Realization of a rubrene-based organic pyrophototronic flexible nanogenerator

The pyrophototronic effect has been realized in our previous works, along with its applicability in nanogenerators. We have extended its capability in the current work by successfully fabricating a pyrophototronic nanogenerator device on a flexible substrate. The flexible device may serve in applications that demand bendability. We have synthesized

crystalline rubrene on ITO-coated PET substrate using plasma-enhanced chemical vapor deposition (PECVD) and counter-electrode Aluminium deposition on the top. Here, we have observed the maximal responsivity of the device under on-off illumination at different wavelengths. Then, the flexible device is bent repeatedly in successive increasing numbers (Fig. 9). Post-bending analysis is conducted under light on-off conditions while the device is relaxed. We report on the device's current-time and voltage-time responses and check for stability. It was found that initially, electrical output increases, but later, it decreases to the level of normal unbent output. This work helps us realize that our so-synthesised flexible devices under induced bending enhance pyrophototronic output. This reveals the applicability advantage of flexible nanogenerator devices based in organic framework as they pave biocompatible way to harness nano-level energy to power up miniature wearable sensors and devices that may be useful in our daily lives.

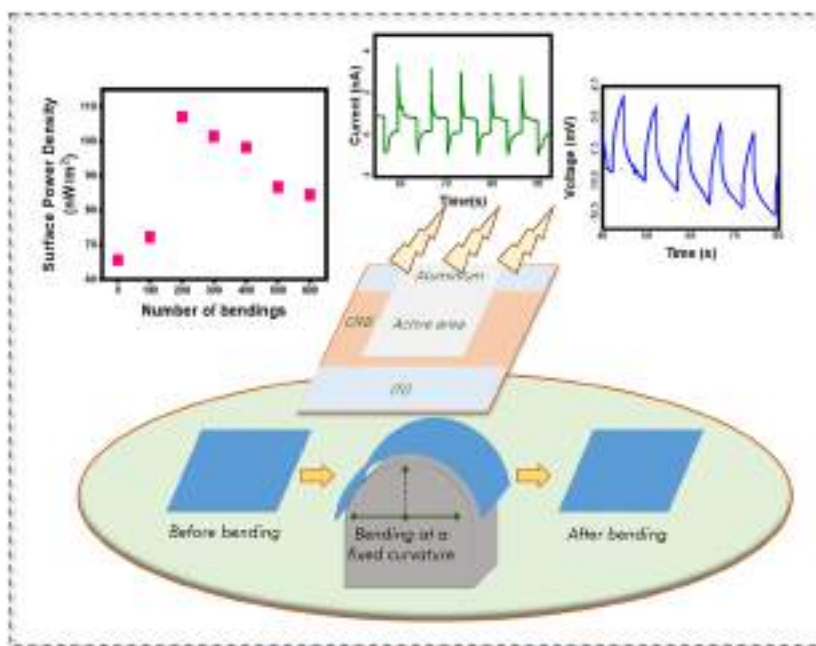


Fig. 9. Schematic of bending analyses and current & voltage temporal response output. Surface power density generation is also shown here.

D. Materials Modelling and Simulation

Coordinator: Dr. M.B. Sahariah

D.1. Potential half-metallic Heusler compound for spintronics applications: a quantum modelling approach

The electronic and magnetic properties of $Mn_{1.5}PtSn$ inverse tetragonal Heusler compound are studied using density functional theory. Three different spin arrangements are considered for the Mn atom, namely ferromagnetic (FM), anti-ferromagnetic (AFM), and ferrimagnetic (FiM) configurations. As there is a heavy element Pt in this compound, the effect of spin-orbit coupling (SOC) will also come in the scenario. From the calculations, the FiM configuration is energetically more stable in the ground state than the other two

configurations. The inclusion of SOC does not affect the relative stability of the magnetic structures; however, SOC lowers the ground-state energy of each spin configuration and makes them more stable. These observations are verified using the density of states (DOS) calculation. It is observed from DOS that there is a band gap around the Fermi level in the down spin state in the case of FM and FiM configurations, which further suggests that by slightly changing the constituent atoms, it may be possible to achieve half-metallicity in this compound. The calculated magnetocrystalline anisotropy (MCA) energy for the stable ferrimagnetic configuration is comparatively low, which makes the compound promising for applications like magnetic recording devices and the formation of spin spiral configurations (Fig. 10).

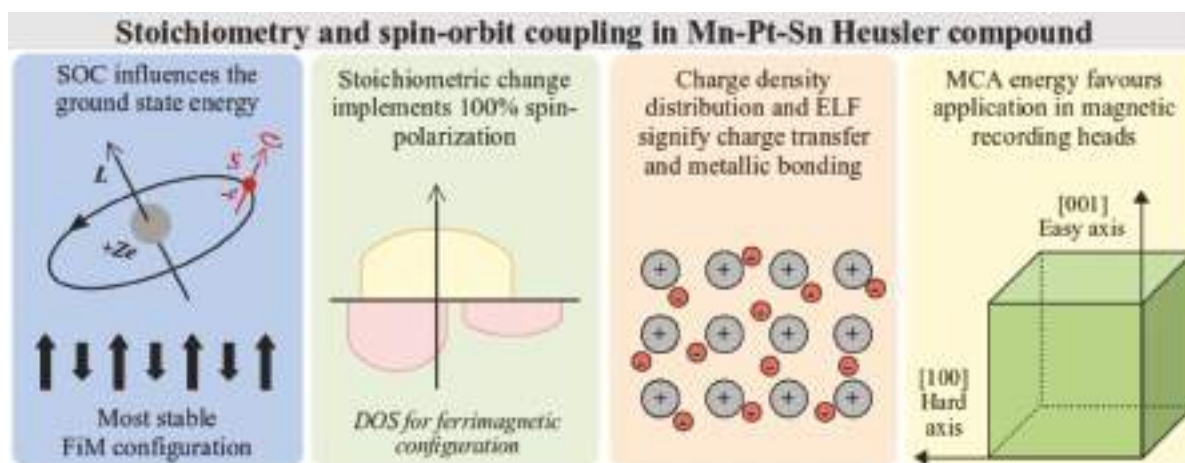


Fig. 10. Illustration of half-metallicity and magnetocrystalline anisotropy in $Mn_{1.5}PtSn$.

D.2. Global minima structure and electronic properties of zirconium nitride nanoclusters

Zirconium nitride (ZrN) is the second most explored metal nitride after titanium nitride in its bulk phase. Though the bulk phase is studied extensively, the nanocluster (NC) geometries of ZrN remain a mystery. Based on this clue, Ab-initio molecular dynamics simulation is used to generate some NCs of ZrN (Zr_nN_n , $n=4-10$). This is followed by studying

their electronic and vibrational properties to understand the underlying physics. The bond lengths of all the NCs are found to follow an increasing order while going from smaller to larger clusters. The binding energy calculation suggests that among the NCs, Zr_9N_9 is the most stable and has the highest binding energy. The Zr-N bonding in these NCs is also ionic, except for Zr_5N_5 . For Zr_5N_5 , both ionic and metallic bonding appear to be present in the system. The

density of the state plot shows that excess d-electrons of Zr are responsible for the conductivity of these NCs. All the NCs are dynamically stable based on the analysis of

phonon vibrational spectra. To conclude, this study opens up the possibility of studying the optical properties of these nanoclusters for future applications (Fig. 11).

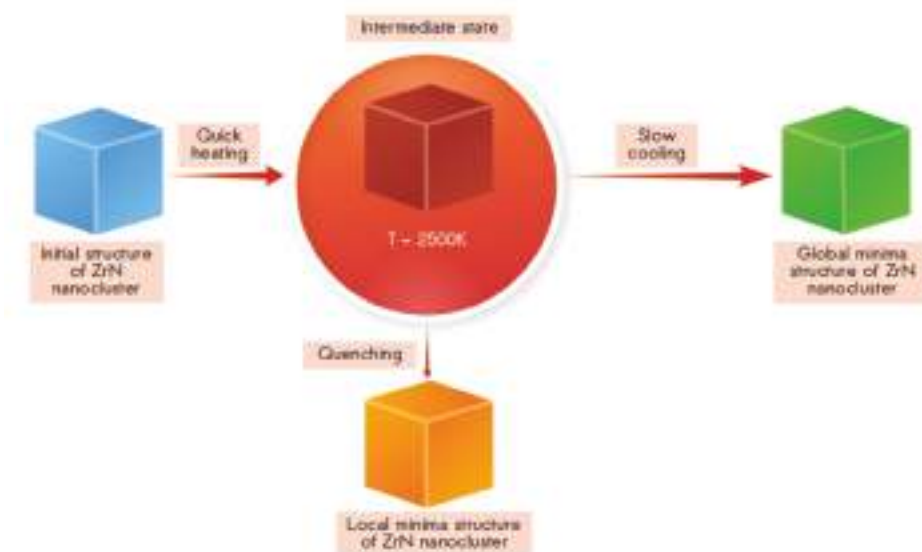


Fig. 11. AIMD simulation of ZrN nanocluster at 2500K.

E. Soft Materials

Coordinator: Dr. S. Kundu

E.1. Structure, morphology, and surface thermodynamics under hysteresis of lysozyme monolayer on water surface from a three-component solvent solution

Monolayers of pure lysozyme were formed on the water surface from a three-component solvent solution containing chloroform, methanol, and water. Surface pressure (π)-mean molecular area (A) isotherms and successive compression-expansion π - A isotherm cycles of the protein monolayers were studied by varying the subphase pH to explore compressibility and irreversible hysteresis behaviours of the monolayers. The hysteresis area of the monolayer was found to be more at pH 4.0, while it is relatively less at pH 7.0 and 9.5, respectively. The in-situ features of lysozyme monolayers were visualised by Brewster angle microscopy,

whereas the interconnected globular-like morphology of the deposited films was revealed by atomic force microscopy. Electron density profiles obtained from X-ray reflectivity analysis of the films deposited during the monolayer's first and second compressions showed the structural reversibility of lysozyme molecules under compression and expansion, independent of subphase pH condition. However, the films became relatively compact during the second compression as the maximum electron density was slightly increased. The stable feature of lysozyme monolayer on the water surface was also confirmed from the normalized area-time curves at pH 7.0. The mechanism of structural rearrangement of lysozyme molecules with surface pressure variation at different subphase pH was explored, correlating the macroscopic and microscopic information (Fig. 12).

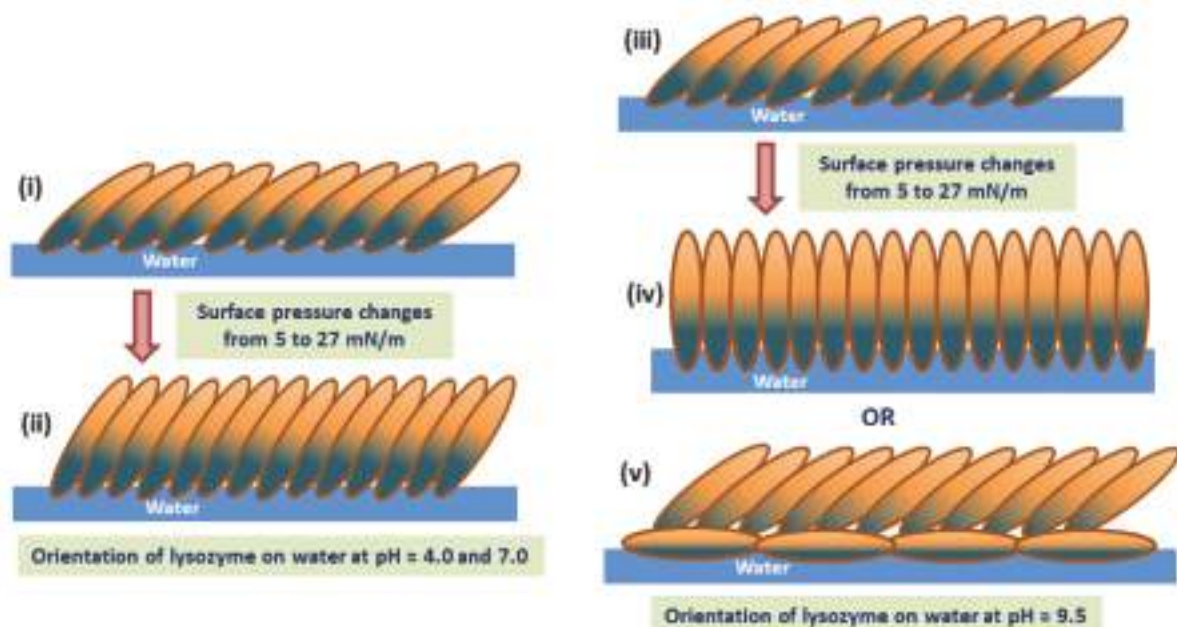


Fig. 12. Schematic representation of a structural modification of lysozyme molecules on water surface under barrier compression and expansion at different subphase pH, i.e., from pH $\approx$ 4.0, 7.0, and 9.5.

E.2. Transparent and superhydrophilic flexible protein films with anti-fogging and self-cleaning attributes

Cyanoglycoside-modified flexible protein films with a high transparency rate were successfully prepared from lysozyme and

glycerol with varying amounts of amygdalin (20, 40, and 60%) using water as a solvent. The increasing percentage of amygdalin facilitated the drastic improvement of the hydrophilicity of the surface with the decrease in the water contact angle to 5.6° , resulting in superhydrophilicity.

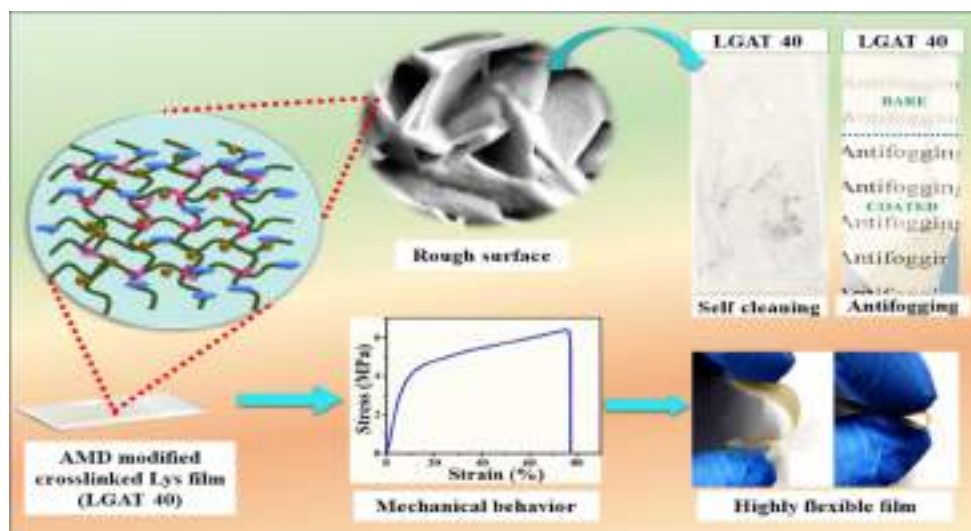


Fig. 13. Amygdalin (AMD) modified crosslinked biopolymer lysozyme films with enhanced hydrophilicity, flexibility, antifogging, and self-cleaning behaviors.

Such superhydrophilic characteristics were pertinent to the resulting protein films' excellent antifogging and self-cleaning attributes. In addition to this flexibility, the thermal stability of the films also improved considerably with 40% loading of amygdalin in the protein solution. The superior mechanical, optical, and thermal properties of amygdalin-modified films were due to the strong hydrogen bonding with the peptides of lysozyme, which was interpreted from the disappearance of the amide bands in the cured protein films. Thus, these transparent protein films with antifogging and thermostability properties could be potentially used for different packaging and coating applications (Fig. 13).

F. Materials for Energy and Environment

Cordinator: Dr. B. Choudhury

F.1. Self-assembled p-n homojunction in SnS₂ nanosheets with photoelectrocatalytic activities

Sulphur vacancies in tin disulphide (SnS₂) nanosheets are crucial in improving their photocatalytic pollutant degradation and electrocatalytic hydrogen evolution reaction

(HER) performance. Our studies have undergone a novel and greener approach where prolonged centrifuge washing instigates fractionation and thinning of SnS₂ layers. Additionally, this triggers the increasing population of sulphur vacancies (V_s) over the SnS₂ surface. Three sophisticated techniques i.e., core level X-ray photoelectron spectroscopy (XPS), electron paramagnetic resonance (EPR), and positron annihilation spectroscopy (PAS) were utilized to probe. Also, we have found V_s drives Sn⁴⁺ → Sn²⁺ conversion across the surface of SnS₂, thus generating a p-n homojunction. The greater the population of V_s, the higher the p-n built-in potential and the higher the photogenerated charge separation and superior photocatalytic activity (Fig. 14a-b). The p-n plot probed the Mott-Shottky junction, and the VS-mediated mass (H⁺ or proton) transfer towards the electrocatalytic sites was probed by the Nyquist plot obtained from EIS (Fig. 14a-c). As a result, the prolonged centrifuged washed SnS₂ showed better HER performance than the least washed ones. Additionally, the p-n junction increases electrocatalytic activity when exposed to visible light compared to that measured under dark (Fig. 14d).

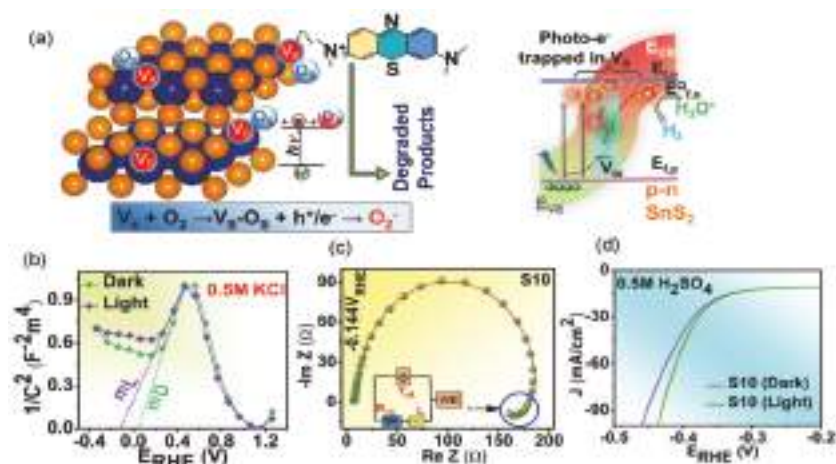


Fig. 14. (a) Facile carrier separation at the p-n junction of the SnS₂ nanosheet supports dye adsorption and degradation. (b) Mott-Schottky plot, (c) Nyquist plot, and (d) LSV plot of p-n SnS₂.

F.2. Charge localization and reduced OER performed in layered double hydroxide

In this work, the primary focus is on understanding the electrocatalytic oxygen evolution (OER) ability of nickel-iron (NiFe) layered double hydroxides (LDH). This is because improving the efficiency of the OER contributes to the overall efficiency of water-splitting processes. In this context, in addition to NiFe LDH, two other trimetallic systems, ZnNiFe and CoNiFe LDH, are synthesized and investigated for electrocatalytic activity in 1M

KOH. Strikingly, the OER activity of the trimetallic systems was more exacerbated than that of the bimetallic system. Systematic investigation reveals that the reduced activity in the trimetallic system can be attributed to breakage in the charge transfer chain of Ni-O-Fe-O-Zn and Ni-O-Fe-O-Co moieties and confinement of phonons. This leads to the trapping of charge carriers, affecting the reaction pathway and kinetics and thus reducing water oxidation activity (Fig. 15).

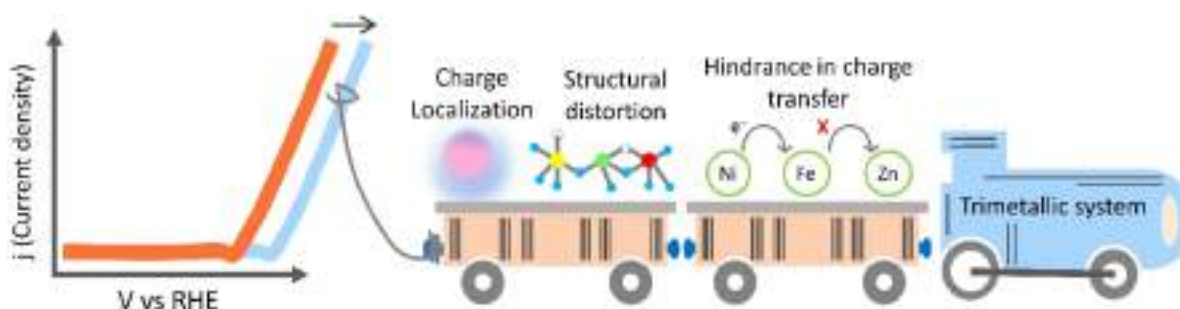


Fig. 15. Scheme showing a reduced OER activity in trimetallic layered double hydroxide contributed by charge localization, structural distortion with successive hindrance in charge transfer.

G. Metal-Organic Frameworks

Coordinator: Dr. A. Kalita

G.1. Functional organic framework and derived materials for CO₂ capture

The rationale behind a well-structured and durable adsorbent is highly reasonable. In this regard, Organic Framework and its derivative materials have greatly expanded their use in various fields. With an ultrahigh surface area of 1428 m²/g, we describe a covalent organic framework made of naphthalene tetracarboxylic dianhydride and tris-(4-amino phenyl)-amine that exhibits active carbon dioxide (CO₂) adsorption at a range of temperatures. We also validate an easy-to-scale, scalably-controlled technique generated by post-synthesis air-liquid interfacial plasma (ALIP) that explicitly increases the pristine framework's surface area to a higher value of 2051 m²/g.

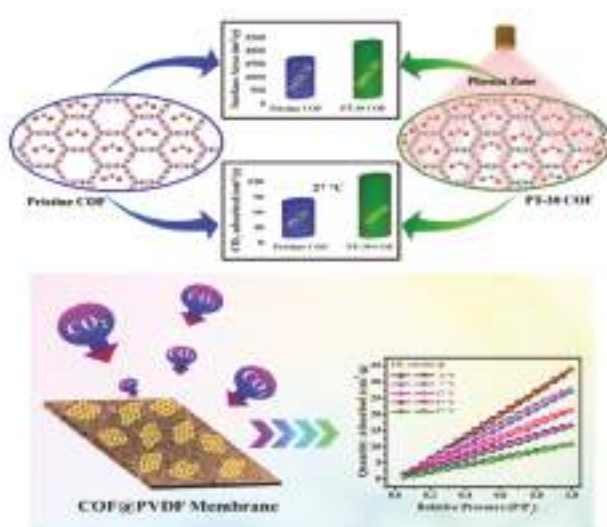


Fig. 16. The overall schematic representation of CO₂ capture using organic framework and derived composite membrane.

With the help of the post-synthetic plasma method described here, the virgin COF's surface area rapidly increased by 43%, increasing CO₂ uptake to 67% simultaneously. Hence, the current study may open up a new frontier in the design and fine-tune the properties of the covalent framework that unfolds the advanced

outlook in addressing the challenges of CO₂ capture. In a different strategy, we have devised a high surface area COF-impregnated polymeric support-based platform called COF@PVDF composite membrane that is both effective and straightforward and exhibits enhanced CO₂ adsorption capabilities (Fig. 16).

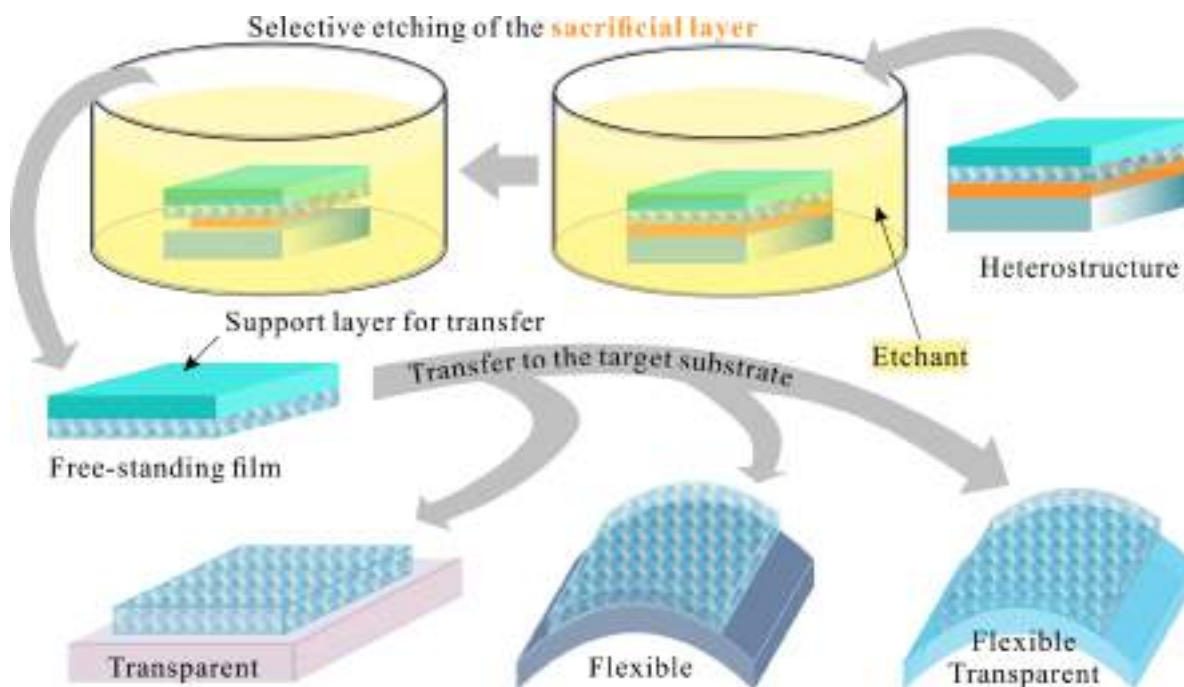


Fig. 17. Transfer process of the freestanding film.

H. Flexible Electronics

Coordinator: Dr. S. Samanta

A heterostructure for flexible electronics is constructed with a sacrificial layer of $\text{Sr}_3\text{Al}_2\text{O}_6$ (SAO) deposited on the substrate (e.g. SrTiO_3 , Si) by chemical solution deposition followed by the ferroelectric layer (such as $\text{La-Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$, AlScN). On top of it, a polydimethylsiloxane (PDMS) support layer is placed to prevent

damage to the ferroelectric layer during the transfer. SAO is water-soluble. The heterostructure is submerged in deionized (DI) water to etch the SAO layer. After the detachment from the STO substrate, HZLO/PDMS is transferred to a target substrate (n-type Si wafer / ITO-Glass / PET substrate / Mica) and PDMS, and the remaining water will be removed by heating (Fig. 17).

RESEARCH OUTPUT

EXTRAMURAL PROJECTS

Completed projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Achievement
Non-collinear Magnetism in Heusler Materials	Funding Agency: DST-SERB Total fund: Rs.25,20,720/- Duration: 3 years PI/Coordinator: Dr. (Mrs.) Munima B. Sahariah Co-Investigator: NIL	- Structural stability, bonding characteristics, and electronic properties of Mn_2PtSn and Pt_2MnGa heusler alloys - Effect of stoichiometry on electronic and magnetic properties of Mn-Pt-Sn Heusler alloy - Two research papers published in international journals based on the works done in the project

Ongoing projects:

Title of the project:	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Goal
Development of graphene oxide bio-composites for application in the field of sensing and bio-remediation	Fund. Agency: IASST, DST Total fund: Rs. 2 Lakhs Duration: 2 years PI/Coordinator: Prof. N. Sen Sarma	Synthesize graphene oxide-based nanomaterials suitable for simple and cost-effective fabricating procedures to generate sensor devices, especially the intelligent sensing platform, which has sufficient attention in the biomedical field.
Phosphorene-borophene based composites: A bio and chemo-sensing platform	Fund. Agency: IASST, DST Total fund: Rs. 4 Lakhs Duration: 2 years PI/Coordinator: Prof. N. Sen Sarma	- Developing a material based on 2D nanomaterials, phosphorene, borophene, and bio-compatible composites. - These composites will help fabricate sensitive, cost-effective, eco-friendly, and portable devices that detect biologically important molecules and hazardous gases and chemicals.

Development of MXene and Xene-based composites for sensing, environmental remediation, and energy generation platform	Fund. Agency: IASST, DST Total fund: Rs. 3 Lakhs Duration: 2 years PI/Coordinator: Prof. N. Sen Sarma Co-Investigator: Dr. A. Devi	• To synthesize 2D Xene materials using less toxic substrates and bio-compatible pathways. • The composite materials with polymers, oxides, and CNT will enhance physical and chemical properties for desired applications.
Developing functional bio-polymer composite for food packaging applications	Funding Agency: IASST Total fund: Rs. 9 Lakhs Duration: 2 Years PI/Coordinator: Prof. D. Chowdhury	• Developed chitosan-sodium alginate composite film using banana corm extract and mushroom. • The developed bio-polymer composite films are water-resistant and chemical-resistant. • The developed bio-polymer composite films are printable as well. • Developed Guar Gum–Sodium Alginate–I-Carrageenan tri-biopolymer blended composite film. • Cellulose nanocrystals (CNC) were derived from cloth waste lint (CWL) from a household cloth dryer machine. • Ag nanoparticles were incorporated in the nanocomposite film, exhibiting antimicrobial activity against <i>Escherichia coli</i> ATCC 25922 and <i>Bacillus cereus</i> MTCC 1272.
Interaction study of protein-metal ion, protein nanomaterial/composite	Funding Agency: IASST Total fund: Rs. 8 Lakhs Duration: 2 Years PI/Coordinator: Prof. D. Chowdhury Co-Investigator: Dr. Kamatchi S.	• Studied the interaction of amino acids and metal ions and found that metal ions bind with amino acids through nitrogen, oxygen, or both nitrogen and oxygen. • Binding studies with active sites of Calmodulin protein show that only threonine preferred binding of calcium ions among all other amino acids; however, nature chooses calcium ions for Calmodulin protein, which means other factors are associated with it. • The DFT calculations also predict that Cu has the highest binding affinity with glutamic acid, similar to experimental data.

Study on pyro-phototronic effect in Plasma synthesized centrosymmetric and non-centrosymmetric materials	Funding Agency: IASST Total fund: Rs. 6.00 Lakhs Duration: 2 Years PI/Coordinator: Prof. A. R. Pal Co-Investigator: Dr. M. B. Sahariah and Dr. B. Choudhury	• Study on the effect of surface layer modification on the pyro-phototronic behavior of sandwich-type devices fabricated using plasma-prepared thin films. • The effect of combining centrosymmetric and non-centrosymmetric material on the device operation will also be studied.
Evaluation of structure, morphology, and thermodynamical behaviors of ultrathin films from pure proteins and protein-lipid composites	Funding Agency: IASST Total fund: Rs. 6.00 Lakhs Duration: 2 Years PI/Coordinator: Dr. S. Kundu Co-Investigator: Dr. S. Biswas	• Preparation of pure protein films at air-water and liquid-solid interfaces. • Studies on prepared protein films using spectroscopic, microscopic, and scattering techniques under different physicochemical changes to explore macroscopic and microscopic behaviours. • Preparation of protein-lipid complex films and their structure, morphology and thermodynamic behaviours by changing physicochemical parameters.
Polymer composite thin films having superior electrical and mechanical responses	Funding Agency: IASST Total fund: Rs. 6.00 Lakhs Duration: 2 Years PI/Coordinator: Dr. S. Kundu	• Formation of cross-linked polymer film and exploring its structure-property correlation. • Investigation on electrical and mechanical properties of polymer composite films and its potential applications into packaging, sensing, antibacterial activities, etc. • Stretchable polymeric film with enhanced electrical and mechanical properties.
Doped SnS ₂ nanostructures for electrocatalytic water splitting	Funding Agency: IASST Total fund: Rs. 8 Lakhs Duration: 2 Years PI/Coordinator: Dr. B. Choudhury. Co-PI: Prof. A.R. Pal	• Fabrication of pure SnS₂ and Co-SnS₂ nanostructures through hydrothermal route. • Plasma-induced surface modification of Co-SnS₂ nanostructures.

		Electrocatalytic hydrogen and oxygen evolution reaction (HER and OER) in acidic, neutral, and alkaline electrolyte.
A facile strategy towards Naphthalene Diimide based Metal Organic Frameworks-Polymer Composite Membrane as Traps for Selective Capture of CO₂	Funding Agency: DST (INSPIRE) Total fund: Rs. 35 Lakhs Duration: 5 Years PI/Coordinator: Dr. A. Kalita	- The project aims to develop potentially active functional organic framework materials such as metal-organic (MOFs) and covalent organic (COFs) and their derived composites employing naphthalene diimide as the core entity. - Their structure-property relationship for tuning the adsorption behavior towards greenhouse CO₂ gas has also been investigated. Moreover, post-functional alteration techniques such as plasma are introduced to enhance adsorption performances further. - The framework-polymer composite membrane has also been developed and investigated for CO₂ capture activity, benefiting industrial applications.
Electrocaloric effect and energy storage in freestanding films for transparent flexible electronics	Funding agency: DST (Ramanujan Fellowship) Total fund: Rs. 1,19,00,000/- Duration: 5 Years PI: Dr. Shibnath Samanta	- Understanding the fundamentals of thin films (such as the origin of unexpected ferroelectricity in HfO₂, finite-size effect on their ferroelectric properties, etc.) free from substrate effects and constraints on their properties. - Fabrication and performance study of electrocaloric devices made using freestanding films. - Studies on memory, energy storage, and sensor applications for the freestanding films.

PUBLICATIONS

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./page no.	Month/Year of publication	Impact Factor of the Journal
N. Sultana, N. Barman, P. J. Medhi, N. Sen Sarma	Development of p-n heterostructure using phosphorene and SnO ₂ : Its efficacy towards the adsorption study of CO ₂ and rose bengal dye	Langmuir	39 (51)/ 18946-18957	November/ 2023	3.97
N. Sultana, C. T. Singh, M. R. Khan, and N. Sen Sarma	An optical sensing platform for the detection of anticancer drugs and their cytotoxicity screening using a highly selective phosphorene-based composite	Nanoscale	15/17570-17582	October/ 2023	6.7
K. J. Goswami, A. Boruah, and N. Sen Sarma	Smart-phone-assisted optical biosensors based on silk-fibroin decorated reduced graphene oxide quantum dots for fluorescent turn-on recognition of l-dopa	ACS Appl. Nano Mater	6 (12)/ 10191–10201	June/ 2023	6.14
K. J. Goswami, A. Boruah, and N. Sen Sarma	“Click” reaction-mediated silk fibroin-functionalized thiol-branched graphene oxide quantum dots for smart sensing of tetracycline	ACS Omega	8 (24)/ 21914–21928	June/ 2023	4.13
S. Rahman, A. Konwar, A. N. Konwar, S. Dubey, M. P. Ghosh, B. Boro, D. Thakur, D. Chowdhury	Ag Nanoparticle Incorporated Guar Gum–Sodium Alginate–I-Carrageenan Tribiopolymer Blended Cloth Waste Lint Extracted Cellulose Nanocrystal Antimicrobial Composite Film	Biomacromolecules	12/795–815	March / 2024	6.2

B. Boro; J. S. Boruah; C.Devi; Alemtoshi; B. Gogoi; P. Bharali; P. V. B. Reddy; D. Chowdhury; P. Kalita	A Novel Route to Fabricate ZnO Nanoparticles using Xanthium indicum Ethanolic Leaf Extract: Green nanosynthesis perspective towards photocatalytic and biological applications.	<i>J. Mol. Struct.</i>	1300/ 137227-137242	March / 2024	3.8
M. Barman; S. Rahman; N. Joshi; Neeraj Sarma; P. Bharadwaj; D. Thakur; R. Devi; D. Chowdhury; C. Hurren; R. Rajkhowa	Banana fibre-chitosan-guar gum composite as an alternative wound healing material	Int.J. Biol. Macromol	259/ 129653-129668	February / 2024	8.2
R. Sonkar, N.J. Mondal, B. Boro, M.P. Ghosh, D. Chowdhury	Cu doped ZnO Nanoparticles: Correlations Between Tuneable Optoelectronic, Antioxidant and Photocatalytic Activities	J.Phys. Chem. Solids	185/ 111715 -111731	February / 2024	4.0
P. Chakravarty, H. Deka, D. Chowdhury	Green Titanium dioxide (TiO ₂) Nanoparticles Assisted Biodegradation of Anthracene Employing Serratia quinivorans HP5	J. Basic Microbiol	1–14	February / 2024	3.1
S. Rahman, A. Konwar, G. Gogoi, D. Chowdhury	Biopolymer-Mushroom Nanofiber Composite Xerogel Film: Bio-Base-Mediated Green, Chemically Resistant, Edible, and Printable Films.	ACS Sustain. Chem. Eng.	12/ 795-815	January / 2024	8.4
S. Rahman, J. Gogoi, S. Dubey, D. Chowdhury	Animal Derived Biopolymers for Food Packaging Applications: A Review	Int.J. Biol. Macromol	255/ 128197-128220	January / 2024	8.2

R. Sonkar, N. J. Mondal, S. Thakur, E. Saikia, M. P. Ghosh and D. Chowdhury	Cobalt-substituted ZnS QDs: A Diluted Magnetic Semiconductor and Efficient Photocatalyst	Nanoscale Adv.	5(24)/7042–7056	December / 2023	4.7
N. J. Mondal, R. Sonkar, B. Boro, M. P. Ghosh; D. Chowdhury	Nanocrystalline Ni-Zn Spinel Ferrites: Size-Dependent Physical, Photocatalytic and Antioxidant Properties.	Nanoscale Adv.	5/ 5460-5475	October / 2023	4.7
A. Deb, D. Chowdhury	Biogenenic Carbon Quantum Dots: Synthesis and Applications.	Curr. Med. Chem.	http://dx.doi.org/10.2174/092986733066623060810520	August / 2023	4.1
K. Phukan, H. Sarma, R. Devi, D. Chowdhury	Acute Toxicity Study of Onion Peel-Derived Gold Nano-Bioconjugate.	3 Biotech	13/172	June / 2023	2.89
J. Gogoi, D. Chowdhury	Photodegradation of Emerging Contaminant Tetracycline using Zinc titanate Nanocellulose Composite as an Efficient Photocatalyst.	Material Adv.	4/ 2088-2098	May / 2023	5.0
T. Bhattacharjee, A. Konwar, J. S. Boruah, D. Chowdhury, G. Majumdar	A Sustainable Approach for Heavy Metal Remediation from Water using Carbon Dot based Composites: A Review	J. Hazard. Mater. Adv.	10/ 100295	May / 2023	
T. Bhattacharjee, A. Bhattacharjee, D. Deka, M. K. Purkait, D. Chowdhury, G. Majumdar.	Adsorption Characteristics of Cetirizine on Graphene Oxide.	Sustain. Chem.	4/ 209–223.	May / 2023	
N. J. Mondal, R. Sonkar, S. Thakur, N. Ch. Adhikary, D. Chowdhury	Structural Modification in Au-MoS ₂ Quantum Dot Composites for Improved Catalytic Efficiency in p-Nitrophenol Reduction.	ACS Appl. Nano Mater.	6/7351–7363	May / 2023	6.140

J. Gogoi, T. K. Sarma, D. Chowdhury	Carbon Dots as Solubilizing Agent for Insoluble Phosphates in Enhancing Soil Fertility	Chemistry Select	8/e202204695.	May / 2023	2.307
R. C. Jose, T. Kanchal, B. Louis, N. C. Talukdar, D. Chowdhury	Grain Characteristics, Moisture, and Specific Peptides Produced by <i>Ustilaginoidea virens</i> Contribute to False-smut disease in rice (<i>Oryza sativa</i> L.)	Biomolecules	13/669	April / 2023	6.064
Paramita Chakravarty, Hemen Deka, Devasish Chowdhury	Anthracene Removal Potential of Green Synthesized Titanium dioxide Nanoparticles (TiO ₂ -NPs) and <i>Alcaligenes faecalis</i> HP8 from Contaminated Soil	Chemosphere	321/138102.	April / 2023	7.086
M.Sharma, M.K.Jaiswal, S.Podder, J.Bora, S.Karmakar, B.Choudhury, A.R.Pal	A study on the applicability of thin film over powder for visible light photocatalysis	Physics B: Condensed Matter	670/415354	December/2023	2.8
J.Bora, B.Basumatary, S.Podder, D.Gogoi, B.Sharma, P.Bhagowati, B.Choudhury, D.S.Patil, A.R.Pal	A substrate constituent Na-catalyzed growth of carbon nanotubes on glass substrate by atmospheric pressure PECVD	Appl.Surf. Sci.	648/158988	November/2023	6.7
B.Basumatary, D.Gogoi, S.Podder, J.Bora, K.B.Singh, S.D.Bora, A.R.Pal, D.S.Patil	A -conjugated organic pyroelectric nanogenerator (OPyNG) based on pyrophototronic effect	Nano Energy	114/108655	July/2023	17.6
P. Bhagowati, M. B. Sahariah	Structure, stability and electronic properties of zirconium nitride nanoclusters	Nanotechnology	35/025701	October/2023	3.5

D. Sarma, U. Saikia, M. B. Sahariah	He clustering and role of vacancy in CuZr system	J. Nucl. Mater	583/154488	September /2023	3.1
P. Saha, B. Kakati, P. Bhagowati, M. B. Sahariah	Stoichiometry and spin-orbit coupling in Mn–Pt–Sn Heusler compound	Intermetall ics	159/107915	August/ 2023	4.4
B. Kakati, P. Saha, M. B. Sahariah	Spin-orbit coupling and electronic properties in Pt ₂ MnGa: an ab-initio study	Phys. Scr	98/065961	May /2023	2.9
U. Saikia, M. B. Sahariah, B. Dutta, R. Pandey	Structure, stability and defect energetics of interfaces formed between conventional and transformed phases in Cu–Nb layered nanocomposite	Phys. Scr	98/065959	May/ 2023	2.9
S. Sau, S. Kundu	Fabrication of highly stretchable salt and solvent blended PEDOT:PSS/PVA free-standing films: non-linear to linear electrical conduction response	RSC Adv.	14/ 5193-5206	January/ 2024	3.9
S. Sarkar, A. Saikia, S. Kundu	Transparent and Superhydrophilic Flexible Protein Films with Antifogging and Self-Cleaning Attributes	ACS Appl. Mater. Interfaces	15/ 56397-56412	November/2023	9.5
H. Nath, R. J. Sarmah, S. Kundu	Langmuir monolayer of lysozyme at variable subphase pH conditions: A comprehensive study on structure, morphology and hysteresis behavior	RSC Advances	13/22789-22799	July/2023	3.9
S. Sarkar, A. Saikia, S. Kundu	Effect of ions on adsorption of lysozyme protein below its isoelectric point on hydrophilic (OH-Si) and hydrophobic (H-Si) surfaces	New J. Chem.	47/12697-12708	May/2023	3.925

S. A. Ali, S. Sau, S. Kundu	In-situ fabrication of CuO nanoparticles inside PVA matrix via heat treatment with modified optical, electrical and mechanical properties of the composite films	Colloids and Surfaces A: Physicochem. Eng. Aspects	674/131840	June/2023	5.518
S. Deka, M.K. Jaiswal, P. Rajput, B. Choudhury	Mechanistic insights into electrocatalytically reduced OER performance in marigold-like trimetallic NiFe-based LDH: charge localization and d-band orbital filling	J. Mat. Chem. A	12/9532-9545	March/2024	11.9
M.P. Nath, T. Kalita, D.J. Kalita, D.Sanyal, B. Choudhury	Self-assembled p-n homojunction in SnS ₂ nanosheets for electrocatalytic hydrogen evolution: The role of sulfur defects	ACS Appl. Nano Mater.	6 (23)/22057-22068	November/2023	5.9
H. J. Bora, R. B. Gohain, P. Barman, S. Biswas, N. S. Sarma, A. Kalita	Assessing CO ₂ adsorption behavior onto free-standing, flexible organic framework-PVDF composite membrane: An empirical modeling and validation of an experimental data set	ACS Omega	8 (39)/36065-36075	September/2023	4.1
P. Barman, L. Dutta, S. Bordoloi, A. Kalita, P. Buragohain, S. Bharali, B. Azzopardi	Renewable energy integration with electric vehicle technology: A review of the existing smart charging approaches	Renewable and Sustainable Energy Reviews	183/113518	September/2023	15.9
R. Ghosh, H. Das, A. Kalita, P. K. Kalita, R. Talukdar	Plant-based silver quantum dots for evaluation of Mem-capacitive behavior	J. Electron. Mater.	52/ 6840-6850	August/2023	2.1

H. J.Bora, P. J. Boruah, P. Kalita, G. Gogoi, H. Bailung, N. S. Sarma, A. Kalita	Enabling ultrahigh surface area of covalently-linked organic framework for boosted CO ₂ capture: An air liquid interfacial plasma as post-furnishing protocol	Chem. Eur. J.	29 (38)/ e202300756	July/2023	4.3
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PATENTS

Inventor(s)	Title	Patent Application No.	Provisional/final Patent grant No.
A. R. Pal, A. A. Hussain & D. Gogoi	A Process for Synthesis of Crystalline Rubrene Incorporated Thin Film	Indian Patent Application No. 201931016529 Filed on: 25.04.2019	Granted Patent No. 510863. Date of Grant 14.02.2024
S. Kundu, S. Sarkar, A. Saikia	Amygdalin Crosslinked Transparent Protein Free Standing Films and Process of Preparation Thereof	Indian Patent Application No.: 202331032465 Filed on: 08.05.2023	---
A.R. Pal, J. Bora	A Process For Single-Step Synthesis Of Carbon Nanotube On Glass Substrate	Indian Patent Application No.: 202331043095 Filed on: 27.06.2023	---

BOOK CHAPTERS

Authors Name	Chapter Title	Book Title	Publisher	Year/Month of Publication
N. Sultana, S. Upadhyaya, and N. Sen Sarma	Chapter 4: Nanomaterial-based sensors for the detection of explosives	Nanoscale matter and principles for sensing and labeling applications	Springer, Singapore	2024/March
H. Talukdar, S. Kundu	Protein-polyelectrolyte complexes: structure and properties	Foundation and growth of macromolecular science; advances in research for sustainable development	Apple Academic Press	2024/February
S. Pandit, A. C. Bhowal, S. Kundu	Applications of silver nanoparticles	Green synthesis of silver nanoparticles and its Potential applications	Nova Science Publishers	2023/May

M.K. Jaiswal, B. Choudhury	Effect of ion doping on the photocatalytic performance of g-C ₃ N ₄ under visible light	Recent Trends in Physics Research	Allied Publishers Pvt. Ltd.	2023/August
S. Deka, B.Choudhury	Deciphering the piezo-photocatalytic and photocatalytic behaviour of BiVO ₄ nanorods with anti-bacterial activity	Recent Trends in Physics Research	Allied Publishers Pvt. Ltd.	2023/August
H. J. Bora, G. Gogoi, S. Upadhyaya, K. J. Goswami, G. K. Dutta, A. Kalita	Carbon Nanomaterials for Optical and Electrical Biosensors	Sustainable Nanomaterials for Biosystems Engineering	Apple Academic Press	2023/May

POPULAR ARTICLE PUBLISHED IN NEWSPAPER/MAGAZINE

Authors Name	Article Title	Newspaper/ Magazine name	Volume & Issue no./page no.	Month/ Year of publication
N. Sen Sarma, M. R. Khan, N. Sultana, and C. T. Singh	New highly fluorescent material brings non-enzymatic approach for detection of anticancer drug Methotrexate known for toxicity at high dosage	DST website	—	December/ 2023
D. Chowdhury	Eco-friendly wound dressing developed by Indian scientists using banana fibres	DST STRIDES	Vol 5, Issue 2	February/ 2024
D. Chowdhury	Novel biopolymer film developed with chemical-resistant, edible, and printable properties for food industries	DST newsletter	--	January/ 2024
D. Chowdhury	Structural modification can improve catalytic efficiency	DST newsletter	--	May /2023
A. R. Pal	A new method for sodium catalyzed synthesis of carbon nanotubes could be useful for rechargeable batteries & flexible electronics	DST website	---	February/20 24

A. R. Pal	Organic nanogenerator that harvests light energy can power wearable devices on the go	DST website	---	July/2023
D. Sarma	Gananamulak Samagri Vigyan (In Assamese)	Bijnan Jeuti (A magazine published by Assam Science Society)	48	June 2023
H. Nath, S. Kundu	Scientists fabricate 2D protein monolayer that can help to study diseases like Amyloidosis	Blog or Twitter of DST, Media Cell		November/2023
S. A. Ali, S. Kundu	Scientists fabricated optically active flexible biodegradable polymer-nanocomposite films	Blog or Twitter of DST, Media Cell		September/2023

CONTRIBUTORY

Author(s)	Title	Conference name	Oral/poster	Date & Venue
K.J. Goswami, N. Sen Sarma	Smart phone assisted optical sensors based on biopolymer-decorated reduced graphene oxide core-shell quantum dots for fluorescence turn on detection of anti-perkinson's drug	National seminar on Science, Technology & Innovation at Department of Chemistry	Oral	March 22-23, 2024/ Arya Vidyapeeth College, Guwahati
N. Sultana, N. Sen Sarma	Development of p-n Heterostructure of Phosphorene and SnO ₂ : A Detailed Approach for the Adsorption Study of CO ₂ and Rose Bengal Dye	National seminar on Science, Technology & Innovation at Department of Chemistry	Oral	March 22-23, 2024/ Arya Vidyapeeth College, Guwahati
K.J. Goswami, N. Sen Sarma	Silk fibroin decorated reduced graphene oxide core shell quantum dots for fluorescent turn on detection of l- dopa	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12-15, 2023/ IIT-BHU Varanasi, India
N. Sultana, N. Sen Sarma	Reduced Phosphorene Incorporated Biopolymer Composite Based Electronic Biosensors for the Detection of Uric Acid	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12-15, 2023/ IIT-BHU Varanasi, India

N. Sultana, N. Sen Sarma	An Optical Sensing Platform for the Detection of Anticancer Drug and Cytotoxicity Screening	8 th International Conference on Advanced Nanomaterials and Nanotechnology- ICANN 2023	Poster	November 29-December 1, 2023/ IIT-Guwahati
K.J. Goswami, N. Sen Sarma	Silk fibroin decorated reduced graphene oxide core shell quantum dots for fluorescent turn on detection of l- dopa	8 th International Conference on Advanced Nanomaterials and Nanotechnology- ICANN 2023	Poster	November 29-December 1, 2023/ IIT-Guwahati
N. Barman, N.Sen Sarma	Mixed Solvents Assisted Synthesis of Borophene Sheets Followed by Surface Modification for the Detection of Folic Acid	8 th International Conference on Advanced Nanomaterials and Nanotechnology- ICANN 2023	Poster	November 29-December 1, 2023/ IIT-Guwahati
M. P. Ghosh, D. Chowdhury	Wastewater Treatment using Photocatalytic Effect of Sm doped Cu-Ni Spinel Ferrite Nanoparticles	ICCTBS-2024	Oral	March 18 - March 20, 2024 / Mizoram University
N. J. Mondal, D. Chowdhury	Size-Dependent Photocatalytic Activities of Nanocrystalline Ni-Zn Spinel Ferrites	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12-15, 2023/ IIT-BHU Varanasi, India
M. P. Ghosh, D. Chowdhury	Nanocrystalline Ni-Zn Spinel Ferrites: Size-Dependent Physical, Photocatalytic and Antioxidant Properties	8 th International Conference on Advanced Nanomaterials and Nanotechnology- ICANN 2023	Poster	November 29 -December 1, 2023 / IIT Guwahati
M. Barman, R. Devi, D. Chowdhury, R. Rajkhowa	Musa Balbisiana Fiber-An Eco-Friendly Approach to Sustainability	IFM Research Conference 2023	Poster	Nov 14, 2023 / Geelong, Victoria, Australia

M. Barman, R. Devi, D. Chowdhury, R. Rajkhowa	Seminar on 'Technology: Reshaping Educational and Economic Goals'	Banana fiber as an agro-waste for sustainable development	Oral	June 19 -20, 2023 / LCB College, Guwahati
J. Bora, A. R. Pal	Synthesis of IR transparent carbon-based electrode via hollow cathode plasma source	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12- 15, 2023/IIT (BHU) Varanasi
K. B. Singh, A. R. Pal	Surface plasmon enhanced photodetection in multilayer MoS ₂ with plasmonics titanium nitride	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12- 15, 2023/IIT (BHU) Varanasi
S. Bora, A. R. Pal	Study of the mechanical- coupling effect of rubrene-based organic pyrophototronic nanogenerator	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12- 15, 2023/IIT (BHU) Varanasi
D. Sarma	Role of Vacancy in <i>He</i> Trapping in <i>CuZr</i> System	34 th AGM of MRSI and 5 th Indian Materials Conclave	Oral	December 12- 15, 2023/IIT (BHU) Varanasi
B. Kakati	Anomalous hall effect in Pt ₂ MnGa	34 th AGM of MRSI and 5 th Indian Materials Conclave	Poster	December 12- 15, 2023/IIT (BHU) Varanasi
D. Pegu	Helium (He) pressure-induced phase transformation in Tungsten (W)	34 th AGM of MRSI and 5 th Indian Materials Conclave	Poster	December 12- 15, 2023/IIT (BHU) Varanasi
S. Alom	Surface stability of Mn-based Heusler alloy	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12- 15, 2023/IIT (BHU) Varanasi
S. Sarkar, S. Kundu	Properties of ultrathin BSA films interacted by monovalent ions	International conference on frontiers in pure and applied physics (ICFPAP-2024)	Oral	February 29 - March 2, 2024/USTM, Meghalaya

S. Sau, S. Kundu	Fabrication of DMF blended PEDOT:PSS/PVA polymeric free-standing films: highly stretchable and conducting in nature	International conference on frontiers in pure and applied physics (ICFPAP-2024)	Poster	February 29 - March 2, 2024/USTM, Meghalaya
S. Sarkar, S. Kundu	Reverse Hofmeister effect on bilayer adsorption of lysozyme	67 th DAE solid state physics symposium	Poster	December 20-24, 2023/GITAM, Visakhapatnam
S. Sau, S. Kundu	Evaluation of mechanical and electrical responses of highly stretchable free-standing polymer films	67 th DAE solid state physics symposium	Poster	December 20-24, 2023/GITAM, Visakhapatnam
H. Nath, S. Kundu	Langmuir monolayer of protein (Lysozyme) and lipid (DMPA) complex at air-water interface.	67 th DAE solid state physics symposium	Poster	December 20-24, 2023/GITAM
S. A. Ali, S. Sau, S. Kundu	Facile fabrication of CuO@PVA nanocomposite films via heat treatment with enhanced properties	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12-15, 2023/IIT (BHU), Varanasi
N. Kumar, S. Kundu	Freestanding biopolymer films with enhanced properties	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023 conclave	Poster	December 12-15, 2023/IIT (BHU), Varanasi
M.P. Nath, B. Choudhury	Self-assembled p-n homojunction in SnS ₂ nanosheets for enhanced visible-light-driven photocatalysis and electrocatalysis	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12 – 15, 2023/IIT (BHU), Varanasi
M.K. Jaiswal, B. Choudhury	Investigating HER performance of potassium-doped WO ₃ /CN heterostructure	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12 – 15, 2023/IIT (BHU), Varanasi
S. Deka, B. Choudhury	Electrocatalytic OER performance of Co and Zn doped nanostructured NiFe Layered Double hydroxide nanosheets	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	Poster	December 12 – 15, 2023/IIT (BHU), Varanasi

H. J. Bora	Enabling ultrahigh surface area of covalently-linked organic framework for boosted CO ₂ capture: An air liquid interfacial plasma as post-furnishing protocol	National Seminar on “Science Technology & Innovation-II”	Oral (Best oral presenter)	March 22-23, 2024/Department of Chemistry, Arya Vidyapeeth College (Autonomous), Guwahati, Assam
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CONFERENCES/WORKSHOPS/MEETINGS ATTENDED

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
K.J. Goswami and N. Sultana	National Seminar on Science, Technology & Innovation at the Department of Chemistry	March 22-23, 2024/ Arya Vidyapeeth College, Guwahati
K.J. Goswami and N. Barman	INUP-i2i Hands-on training on Nanofabrication and Characterization Techniques, supported by MeitY, GoI	January 16-25, 2024/Centre for NanoScience and Engineering (CeNSE), IISc, Bangalore
K.J. Goswami and N. Sultana	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	December 12-15, 2023/ IIT-BHU Varanasi, India
K.J. Goswami, N. Sultana, and N. Barman	8 th International Conference on Advanced Nanomaterials and Nanotechnology- ICANN 2023	November 29-December 1, 2023/ IIT-Guwahati
R. Sonkar	Online Familiarization Workshop On Nano Sensors and Optoelectronic Devices (online)	February 14-16, 2024, IIT Guwahati
N. J. Mondal and R. Sonkar	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	December 12-15, 2023/ IIT-BHU Varanasi, India
M. Barman	IFM Research Conference 2023	November 14, 2023/Geelong, Victoria
M. Barman	Seminar on 'Technology: Reshaping Educational and Economic Goals'	June 19-20, 2023/ LCB College, Guwahati

K. B. Singh	INUP-i2i 2024 “online familiarization workshop on nanosensor and optoelectronic devices”	February 14-16, 2024/IIT Guwahati
Prof. A. R. Pal	NIAS-DST Training Program “Transformational Leadership in Science: Re-imagining Science in Indian Society”	February 5-9, 2024/ National Institute of Advanced Studies (NIAS), Bangalore (IISc campus)
K. B. Singh and S. Bora	INUP-i2i “Hands-on training on Nanofabrication and Characterization Techniques”	January 16-25, 2024/Centre for NanoScience and Engineering (CeNSE), IISc, Bangalore
P. Saha	Materials Modelling 2023	November 3-4, 2023/Assam Don Bosco University, Tepesia Gardens, Sonapur,
S. Sarkar, S. Sau	International conference on frontiers in pure and applied physics (ICFPAP-2024)	February 29 - March 2, 2024/USTM, Meghalaya
S. Sarkar, S. Sau, H. Nath	67 th DAE solid state physics symposium	December 20- 24, 2023/Gandhi Institute of Technology and Management (GITAM), Visakhapatnam
S. A. Ali, N. Kumar	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	December 12-15, 2023/IIT (BHU), Varanasi
M.P. Nath, S. Deka, M.K. Jaiswal	34 th AGM of MRSI and 5 th Indian Materials Conclave-2023	December 12 – 15, 2023/ IIT (BHU), Varanasi
H. J. Bora	National Seminar on “Science Technology & Innovation-II”	March 22-23, 2024/Department of Chemistry, Arya Vidyapeeth College (Autonomous), Guwahati, Assam
Dr. A. Kalita	Attended PROMISE AdvancedSchool-1 organized by the Foundation for Innovation and Research-Malta (FiR.mt)	November 6-10, 2023/Malta

PRESENTATION IN CONFERENCES/SEMINAR

INVITED TALKS

Faculty	Title	Programme Name	Date & Venue
Prof. D.Chowdhury	Functional biopolymer functional material for food packaging	8 th International Conference on Advanced Nanomaterials and Nanotechnology- ICANN 2023	November 29 – December 1, 2023 / IIT Guwahati
Prof. D.Chowdhury	Biopolymer Nanocomposite materials for Food packaging Applications	International Conference on Recent Trends in Materials Science & Devices 2023 (ICRTMD-2023)	July 22-23, 2023 G.A.V. Degree College, Jhajjar, Haryana, India and Research Plateau Publishers, Haryana, India (ONLINE)
Prof. D.Chowdhury	Nanotechnology: An interdisciplinary science	Lab visit cum hands-on training program of College faculty under SC/ST community development program of IASST	May 23, 2023/ IASST
Prof. A. R. Pal	An unconventional approach to Carbon Nanotube growth by fused hollow cathode atmospheric pressure PECVD	International conference in pure and applied physics (ICFPAP-2024).	February 29 – 2 March 2024/Department of Physics, University of Science and Technology Meghalaya
Prof. A. R. Pal	Basics of plasma nanotechnology	Workshop on the synthesis of nanoparticles and their applications (WSNA-2023).	December 28, 2023/Handique Girls College, Guwahati
Dr. M. B. Sahariah	Hello Heusler	Workshop on Synthesis of Nanoparticles and their Applications (WSNA-2023)	December 26-30, 2023 Handique Girls' College, Guwahati
Dr. M. B. Sahariah	1. Modeling of Heusler alloys : Role of composition 2. Titbits about Spin-Orbit Coupling in materials	International Workshop on Computer Simulation Methods (IWCSM-2023)	October 16- 20, 2023/NIT Mizoram
Dr. M. B. Sahariah	Unconventional interface structure in Cu-Nb layered nanocomposite	International Conference on Materials Science (ICMS 2024)	January 31- February 02, 2024 Tripura University, Agartala

Prof. D.Chowdhury	Biopolymer Nanocomposite materials for Food packaging Applications	International Conference on Recent Trends in Materials Science & Devices 2023 (ICRTMD-2023)	July 22-23, 2023/ G.A.V. Degree College, Jhajjar, Haryana, India and Research Plateau Publishers, Haryana, India (ONLINE)
Dr. M. B. Sahariah	Stoichiometry-dependent properties of Mn-Pt-Sn Heusler alloy	New Approaches and Machine learning Methods for Ab initio Calculations (NAMMA) Psi-k	July 24-28, 2023/IISc Bangalore
Prof. D. Chowdhury	Nanotechnology: An interdisciplinary science	Lab visit cum hands-on training program of College faculty under SC/ST community development program of IASST	May 23, 2023/ IASST
Dr. B. Choudhury	Emerging Materials for Energy and Environmental Applications	National Seminar on “Science, Technology, and Innovation – II”	March 23, 2024/Department of Chemistry, Arya Vidyapeeth College
Dr. A. Kalita	Breaking barriers: Women in science, technology and innovation	National Seminar on “Science. Technology and Innovation-II”	March 22-23, 2024/Department of Chemistry, Arya Vidyapeeth College (Autonomous), Guwahati, Assam

LECTURES DELIVERED AT OTHER INSTITUTES

Faculty	Topic	Date & Venue
Dr. B. Choudhury	Quality Teaching & Learning in Physics/ Introduction to Nanostructured Materials and Characterization	September 9, 2023/Department of Physics, USTM Meghalaya
Dr. B. Choudhury	Faculty Development Programme (FDP) on “Characterization Techniques for Polymers and their Nanocomposites”/ Introduction to Nanostructured Materials and Nanocomposites and their characterization	January 8, 2024/ CIPET, Guwahati
M.B. Sahariah	“Emptiness, Exploration and Enrichment” - On 'Kalpana Chawla Day'	March 18, 2024/ Handique Girls' College

M.SC. / B. TECH PROJECTS/INTERNSHIP/TRAINING COURSES OFFERED AT IASST

Name of Student	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Mr. Shreyash Vijay Andagonde	SGBAU, Amravati, Maharashtra	PG Intern	Completed	July 2023 - August 2023
Tanmi Kundu	Rajiv Gandhi University, Arunachal Pradesh	PG Intern	Completed	January 2024-February 2024
Chandramani Batsh	Lalit Narayan Mithila University, Bihar	PG Intern	Completed	June 2023-August 2023
Rohan Sunil Warkhedkar	Sant Gadge Baba Amravati University, Maharastra	PG Intern	Completed	June 2023-August 2023
Boobalan D	Karpagam University	PG Intern	Completed	Feb 2023-September 2023
Atiqul Islam/Dr. S. Kundu	Nowgong College	PG Intern	Submitted	June 2023-August 2023,
Mounish Reddy Mannem	Yogi Vemana University	PG Intern	Submitted	March 2023-August, 2023
Pragya Parashar	Cotton University	PG Intern	Completed	December 2023- March 2024
Panasmita Bharadwaj	Cotton University	PG Intern	Completed	December 2023- March 2024

AWARDS/RECOGNITIONS/ACHIEVEMENTS

Faculty/Research Scholar	Achievements
Prof. D. Chowdhury	Acted as judge in Model G20 , Stage 2: Debate Competition at Zonal level initiative in association with INYAS and supported by Ministry of Education, GoI
Mr. Sanu Sarkar from Soft Nano Laboratory received the best poster presentation award in soft matter category at 67 th DAE Solid State Physics Symposium (DAE SSPS-2023) organized by Bhabha Atomic Research Centre (BARC), Mumbai during December 20-24, 2023.	Title: Reverse Hofmeister effect on bilayer adsorption of lysozyme

LIST OF PHD AWARDEES

Name of student	Name of supervisor	Title of the thesis	Award giving university
Bandita Kalita	Prof. N. Sen Sarma	Conjugated and polymeric materials for sensing and adsorption applications	Cotton University
Kabyashree Phukan	Prof. D. Chowdhury	In Vitro and in Vivo Efficacy of Onion (<i>Allium cepa L.</i>) Peel Derived Gold Nano Bioconjugate as an Antioxidant and Anti-Inflammatory Agent.	Gauhati University
Ankita Deb	Prof. D. Chowdhury	Biogenic Carbon Dots and their Nanocomposites as Wound Healing and Chemo-/Bio-Sensing Materials	Gauhati University
Jahnabi Gogoi	Prof. D. Chowdhury	Hybrid Inorganic-Organic Nanocomposite with Tunable Electronic Properties for Catalytic and Sensing Applications	Gauhati University

PSD-2

BASIC AND APPLIED PLASMA PHYSICS

A. Plasma Application in Hydrogen Fuel Cell

Coordinator: Prof. J. Chutia

A.1 Ternary electrode catalyst helps in minimizing Pt-loading in PEM

Transitioning to hydrogen energy with the help of a Proton Exchange Membrane (PEM) fuel cell offers a carbon-neutral, non-toxic alternative to fossil fuels, which is crucial for combating global warming and climate change. Alloy catalyst is a viable way to overcome the high cost associated with PEM cells. The first Pt-Ti binary catalyst has been synthesized to prepare the ternary composite catalyst. Nanopillar-like structures are deposited on the substrate surface (Fig.18). These nanopillars

offer more surface area for catalytic reaction, which, in turn, enhances the PEM cell's performance. A third catalyst component, Zr, is added to the binary catalyst to prepare the Pt-Ti-Zr composite. In this regard, Pt, Ti, and Zr are simultaneously sputtered at 0.15 mbar to synthesize samples TCE1 to configure the anode loading at optimized 0.15 mg cm^{-2} . Further, samples TCE2, TCE3, TCE4, TCE5, TCE6, and TCE7 are fabricated with increasing Pt, Ti, and Zr by controlling the deposition time. For each deposition, all the other sputtering parameters are kept constant. On cyclic voltammetry analysis, it was found that the ternary composite exhibits perfect electrochemical activity. These ternary electrode catalysts are cost-effective and help minimize Pt-loading in PEM fuel cells.

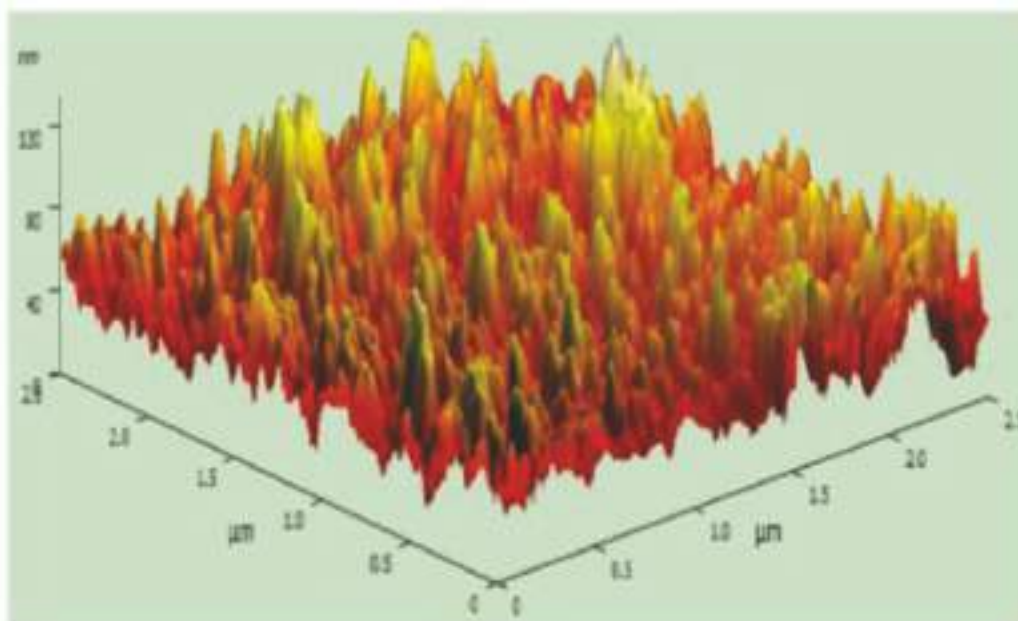


Fig. 18. A typical AFM micrograph showing nanopillar like structure.

B. Basic Plasma

Coordinator: Prof. H. Bailing

B.1 Enhanced photocatalytic activity of Ag/CuO_x nanocomposites: synergistic role of oxygen vacancy defects and plasmonics via solution plasma synthesis

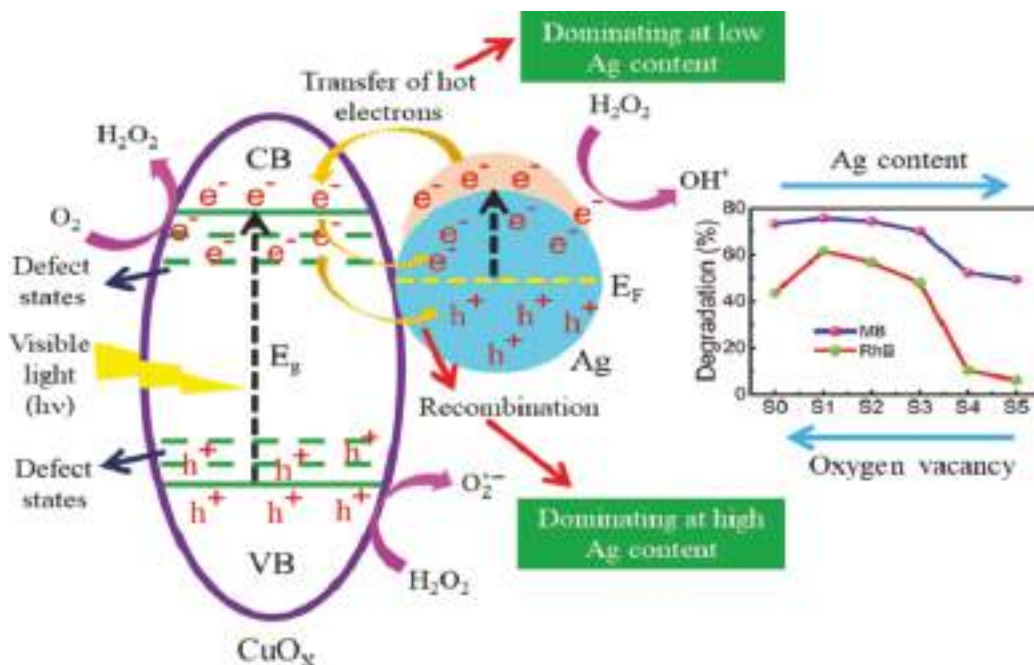


Fig. 19. Probable mechanisms of transferring photo-generated charge carriers (electron and holes) between the Ag nanoparticle and CuO_x nanospindle.

Plasma-liquid interaction an environmentally friendly green approach for developing a nanocomposite from electrode material and a precursor solution. Herein, we have synthesized Ag/CuO_x nanocomposites via plasma generation in an AgNO₃ solution between two copper electrodes. Morphology control of CuO_x nanoparticles, from spindle to flower-like and wire-like structures, is achieved by varying AgNO₃ concentration. Compositional analysis reveals oxygen vacancies due to plasma bombardment, decreasing with higher AgNO₃ concentration. The photocatalytic efficiency of the

nanocomposites is Ag-content dependent: lower Ag content enhances activity compared to bare CuO_x, while higher Ag content diminishes efficiency, accompanied by increased charge-transfer resistance. A proposed photo-degradation mechanism involves charge carrier trapping and transfer between defect-rich CuO_x and plasmonic Ag nanoparticles (Fig.19), supported by charge carrier lifetime analysis. This environmentally friendly approach offers insights into tailored nanocomposite synthesis for efficient photocatalysis with potential applications in environmental remediation.

C. Basic and Applied Plasma Research:

Coordinator: Dr. S. Biswas

C.1 Investigation of low-frequency oscillation in an assisted dc discharged plasma of IASST linear plasma device

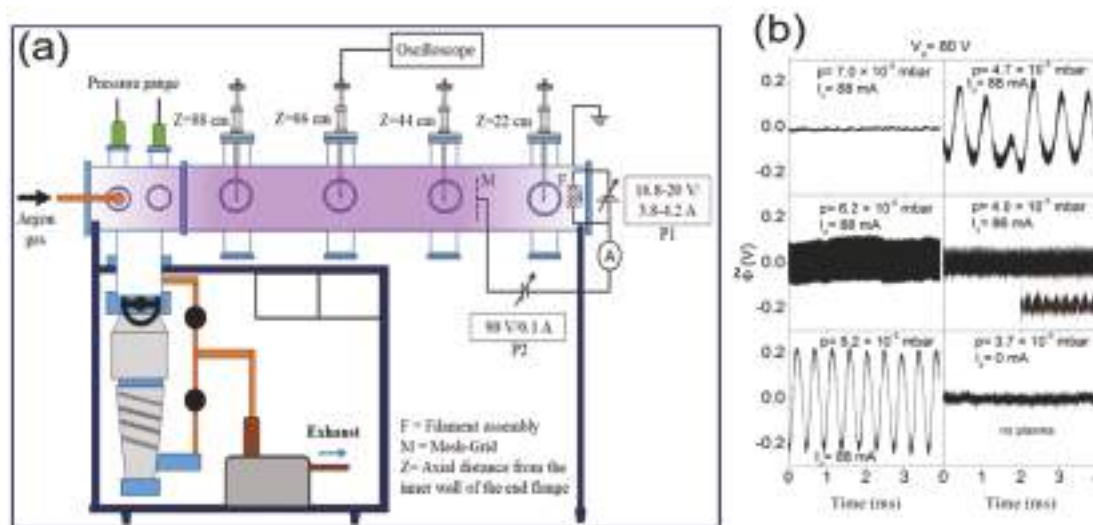


Fig. 20. (a) Schematic of the experimental setup and (b) floating potential fluctuation at various filling gas pressure.

A linear plasma device producing a uniform and quiescent plasma has been fabricated indigenously at IASST for precise study of various waves and instabilities. The high degree of quiescence of the plasma was measured in the neutral pressure range of 1×10^{-4} – 1×10^{-3} mbar. However, the onset of certain instabilities results in a reduced value of plasma quiescence beyond this neutral pressure range. The floating potential and discharge current time series were recorded from various spatial regions with an array of Langmuir probes at different filling gas pressures to investigate these phenomena. Fig. 20 shows the schematic of the experimental setup and time series of recorded floating potential fluctuation at various

filling gas pressures. It was observed that self-excited oscillations with distinctive frequency components were present at both higher and lower filling gas pressures.

Interestingly, the fluctuations detected at lower filling gas pressure appear only for a narrow pressure range just before the extinction of the plasma. The oscillation frequency was found to be dependent on filling gas pressure. The dependence of these self-excited oscillations on filling gas pressure indicates an association with the ionization instability or breathing mode generally observed in the Hall thruster.

RESEARCH OUTPUTS

EXTRAMURAL PROJECTS

Completed projects

Title of the project	Funding Agency; Total Fund; Duration; PI/Coordinator; Co-Investigator	Achievement
Development of Pt-based ternary Oxygen Reduction Reaction (ORR) catalyst with low Pt loading by simultaneous sputtering method for Proton Exchange Membrane (PEM) fuel cell	Funding Agency: DST-SERB Total Fund: Rs. 17,33,985.00/- Duration : 3 Years PI/Co-ordinator: Prof. J. Chutia Co-Investigator: Prof. A. R. Pal	• Nanopillar like structures are deposited on the substrate surface. • The synthesized ternary composite exhibits excellent electrochemical activity. • Electrochemical active surface area and fuel cell performance are significantly enhanced.

Ongoing projects:

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Goal
Application of dielectric barrier discharged cold atmospheric plasma for the treatment of inflammation	Funding Agency: ICMR Total Fund: Rs. 55.38 Lakhs Duration: 3 Years PI: Dr. Subir Biswas Co-Investigator: Dr. P Manna and Dr. J. Borah	• Design and develop of dielectric barrier discharged cold atmospheric plasma source for biomedical application. • Collection of monocytes and proper cell culture to differentiate monocyte derived macrophages (MDM). • Study the effects of treating the monocytes and the MDM by CAP and evaluate their viabilities. • Investigation of the possibilities to drive the polarization of MDM toward M1/M2 phenotypes with the exposure of CAP.

Experimental investigation of zonal flow and turbulence in linear device	Funding Agency: BRNS Total Fund: Rs. 38.65 Lakhs Duration: 3 Years PI: Dr. Subir Biswas PC: Dr. Malay Bikas Chowdhuri, IPR, Gandhinagar Co-PC: Dr. J. Ghosh, IPR, Gandhinagar	• Design and development of a linear magnetized plasma device suitable for zonal flow studies. • Production and characterization of plasma in the device. • Generation of the zonal flow and control of its flow velocity and shear. • Experimental investigation of the zonal flow generation physics.
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PUBLICATIONS

In Cited Journals:

Author (s)	Title	Journal name	Volume & Issue no./page no.	Month/ Year of publication	Impact Factor of the Journal
P. Gogoi, B. Chutia, P. Sut, Y. Bailung, N.C. Adhikary, H. Bailung	Observation of non-planar dust acoustic solitary wave in a strongly coupled dusty plasma	Phys. Plasmas	31/ 023706	February/ 2024	2.20
P. Sut, P. Gogoi, B. Borgohain, N.C. Adhikary, H. Bailung	Investigation of fireball-assisted double layer in a DC discharge plasma	Phys. Lett. A	498/ 129335	January/ 2024	2.60
P. J. Boruah, P. Kalita, H. Bailung	Synergistic role of oxygen vacancy defect and plasmonics on modulating the photocatalytic activity of Ag/CuOx nanocomposites synthesized via solution plasma	Surf Interfaces	43/ 103539 - 103555	October/ 2023	6.20
T. Hazarika, B. Kakati, D. Pal, R. Saikia, A. Rawal	Role of plasma process gas on permeate flux augmentation of cellulose nitrate	Scientific Reports	14/ 6585	March/ 2024	4.6

M. K. Mahanta & S. Biswas	membrane for mud water treatment				
Y. Maron, R. Doron , M. Cvejić, E. Stambulchik, D. Mikitchuk , C. Stollberg, T. Queller, E. Kroupp, G. Rosenzweig, B. Rubinstein, S. Biswas, et al.	Spectroscopic Determination of Magnetic Fields in Pulsed-Power and High-Energy-Density Plasmas	IEEE Transaction on Plasma Science	51/ 3407	November/ 2023	1.5

Book Chapters:

Authors Name	Chapter Title	Book Title	Publisher	Year/Month of Publication
A. A. Neog, B. Kakati and S. Biswas	Effect of Plasma on Surface Morphology of GO Membrane	Emerging Trends in Research in Sciences- A blind peer-reviewed research volume	Purbanchal Prakash	2023

Patent

Inventor(s)	Title	Patent Application No.	Provisional/final Patent grant No.
S. Kalita, R. Kandimalla, B. K. Nath, J. Chutia, J. Kotoky	Antimicrobial Suture Biomaterials	Indian Patent Application No.: 201631006722 Filed on: 26.02.2016	Granted Patent No. 434253. Date of Grant 09.06.2023
J. Chutia, A. J. Choudhury, D. Gogoi	Antibiotic-loaded muga (Antheraea Assam) Silk Fibroin (AASF) as suture biomaterial	Indian Patent Application No.: 726/KOL/2014 Filed on: 02.07.2014	Granted Patent No. 452696; Date of Grant 19.09.2023.
S. Biswas, R. B. Gohain, P. Talukdar, D. Thakur	High voltage high frequency pulse power supply for Dielectric Barrier Discharge- Cold Atmospheric Plasma Torch	Indian Patent Application No.: 202311062859 Filed on: 19.09.2023	---

Popular article published in Newspaper/Magazine:

Authors Name	Article Title	Newspaper/Magazine name	Volume & Issue no. / page no.	Month/Year of publication
P. Sut	Unleashing the power of plasma	The Assam Tribune	Volume 86 No. 92 Page No.6	April 5/2024

Contributory:

Author(s)	Title	Conference name	Oral/poster	Date & Venue
P. Kalita, P. J. Boruah, and H. Bailung	Microplasma-induced Synthesis of TiO_2 Nanoparticle Decorated h-MoO ₃ Microrods for Visible Light Photo-degradation	International Conference on Frontiers in Physics and Applied Physics (ICFPAP-2024)	Poster	February 29 – March 2, 2024/USTM, Meghalaya
P. Sut, P.Gogoi, N.C. Adhikary, P. Pathak, and H. Bailung	Detection of Two Electron Population in a Double Layer and Estimation of Double Layer Strength from Particle Flux Balance	International Conference on Frontiers in Physics and Applied Physics (ICFPAP-2024)	Oral	February 29 – March 2, 2024/USTM, Meghalaya
P. Gogoi, B. Chutia, P. Sut, Y. Bailung, N.C. Adhikary, and H. Bailung	Excitation of a Diverging Non-planar Dust Acoustic Wave in a Laboratory Dusty Plasma	International Conference on Frontiers in Physics and Applied Physics (ICFPAP-2024)	Poster	February 29 – March 2, 2024/USTM, Meghalaya
P. Sut, P.Gogoi, N.C. Adhikary, and H. Bailung	Experimental Study of Double Layer Oscillations in a DC Discharge Plasma	38 th National Symposium on Plasma Science and Technology	Oral	December 4 – 8, 2023/UPES, Dehradun
D. Bora, A. Tarafder and S. Biswas	Observation of Low Frequency Oscillations in a Linear Plasma Device	International Conference on Frontiers in Physics and Applied Physics (ICFPAP-2024)	Oral	February 29- March 02, 2024 / Department of Physics, University of Science and Technology Meghalaya, India

D. Bora, A. Tarafder and S. Biswas	Investigation of Low Frequency Oscillations in a Linear Plasma Device	16 th International Conference on Plasma Science & Applications (ICPSA–2023)	Oral	December 12–14, 2023/University of Lucknow, Lucknow, India (in online mode)
A. Tarafder, D. Bora and S. Biswas	Investigation of Hysteresis in DC Discharge Plasma	16 th International Conference on Plasma Science & Applications (ICPSA–2023)	Oral	December 12–14, 2023/University of Lucknow, Lucknow, India (in online mode)
R. B. Gohain, and S. Biswas	Electrical Characterization of a Dielectric Barrier Discharged Cold Atmospheric Plasma Source Excited by a Quasi-Sinusoidal Voltage	16 th International Conference on Plasma Science & Applications (ICPSA–2023)	Oral	December 12–14, 2023/University of Lucknow, Lucknow, India (in online mode)

Conferences/Workshops/Meetings attended:

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
D. Bora	International Conference on Frontiers in Physics and Applied Physics (ICFPAP–2024)	February 29–March 02, 2024/ Department of Physics, University of Science and Technology Meghalaya, India
P. Kalita	INUP-i2i Hands-on Training on Nanofabrication and Characterization Techniques for North-East Region and Collaborative Institutes	January 16 – 25, 2024/IISc, Bangalore
D. Bora, A. Tarafder, R. B. Gohain	16th International Conference on Plasma Science & Applications (ICPSA–2023)	December 12–14, 2023/University of Lucknow, Lucknow, India (in online mode)
Dr. S. Biswas	7th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2023)	November 12-17, 2023 / Port Messe, Nagoya, Japan

PRESENTATION IN CONFERENCES/SEMINAR

Invited talks:

Faculty	Title	Programme Name	Date & Venue
Dr. S. Biswas	Investigation of Ionization Instability in a Linear Plasma Device	7th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2023)	November 12-17, 2023 / Port Messe, Nagoya, Japan

M.Sc. / B. Tech projects/Internship/training courses offered at IASST :

Name of Student	College/ University	UG/PG Projects/Intern	Status of Project	Duration
Pragya Parashar	Cotton University	PG Intern	Completed	December 2023-March 2024

Awards/Recognitions/Achievements :

Student/Faculty	Achievements
Dr. S. Biswas	Received International Travel Support (ITS) grant from SERB (Sanction Order No: ITS/2023/004730, Date: 31 January, 2024) for attending “7 th Asia Pacific Conference on Plasma Physics, Japan”

List of PhD awardees:

Name of student	Name of supervisor	Title of the thesis	Award giving
Ibnul Farid	Prof. H. Bailung	Development of low loaded Platinum based Catalysts Electrode for PEM Fuel Cell	Gauhati University
Palash Jyoti Boruah	Prof. H. Bailung	Studies on Nanomaterial synthesis using Plasma-Liquid Interaction and investigation of their catalytic activity	Gauhati University
Bidyut Chutia	Prof. H. Bailung	In situ production of Nanoparticles by Plasma Process and study of Collective Processes involved in their dynamics	Gauhati University

PSD-3

MATHEMATICAL AND COMPUTATIONAL SCIENCES

A. Stochastic Modelling

Coordinator: Dr. G. Choudhury

Queueing theory is a mathematical study of waiting time. It is a branch of a stochastic process. In this context, service heterogeneity under the re-service approach is a demanding research topic encountered in many day-to-day queueing situations observed in hospitals, manufacturing, ticket counters, telecommunication systems, inventory, computer communication networks etc. during the period substantial effort has been given on the following investigation.

Control of a queue and a vacation period is one of today's most significant research areas. In the Bernoulli feedback situation, the server starts the service again, which makes the operating cost too high. Therefore, it is mandatory to use some control operating policy. The literature has various control operating policies to control the queue and vacation lengths. However, here, stationary N-policy has been opted, where the server remains idle till the queue length accumulates to N (a threshold value) and resumes service as soon as it becomes equal to or exceeds the threshold value $N (\geq 1)$.

Before starting the actual service, the additional time required to start the service is known as setup time. We can study under N-policy based on the case that the arrival rates vary according to the server's status, and a customer can repeat the same type of service. After the completion of service, the customer can repeat the service as feedback if they are not

satisfied with their service (known in the literature as Markov modulated Poisson input with feedback queue).

B. Artificial Intelligence and Machine Learning

Coordinator: Dr. L. B. Mahanta

B.1 A new cnn model with an interface for fnac image-based breast cancer detection

Cytological evaluation through microscopic image analysis of fine needle aspiration cytology (FNAC) is pivotal in the initial screening of breast cancer. The sensitivity of FNAC as a screening tool relies on both image quality and the pathologist's expertise. To enhance diagnostic accuracy and alleviate the pathologist's workload, a Computer-Aided Diagnosis (CAD) system was developed. A comparative study was conducted, assessing twelve candidate pre-trained models. Utilizing a locally gathered FNAC image dataset, three superior models—MobileNet-V2, DenseNet-121, and Inception-V3—were selected based on their training, validation, and testing accuracies.

Further, these models underwent evaluation in four transfer learning scenarios to enhance testing accuracy. While the outcomes were promising, they left room for improvement, motivating us to create a novel deep convolutional neural network (CNN). The newly proposed model exhibited robust performance with testing accuracy at 85%. Our research concludes that the most lightweight, high-accuracy model is the one we propose. We've integrated it into our user-friendly

Android App, “Breast Cancer Detection System,” in TensorFlow Lite format, with cloud database support, showcasing its effectiveness. Implementing an AI-based diagnosis system with a user-friendly interface can potentially enhance early breast cancer detection using FNAC (Fig. 21).

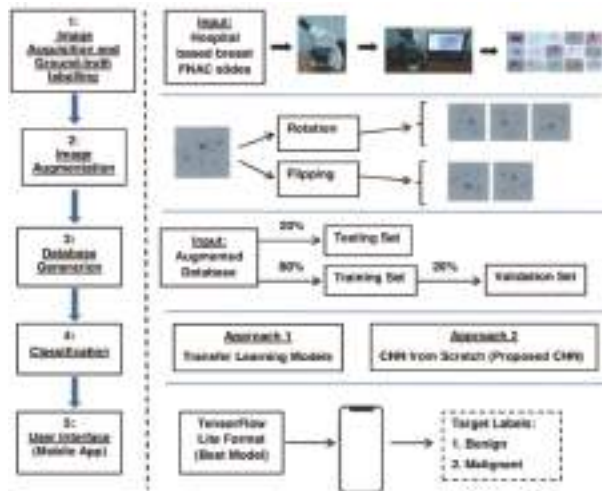


Fig. 21. Workflow of the Breast Cancer Classification Methodology using FNAC.

B.2 Hand-loomed fabrics recognition with deep learning

Every nation treasures its handloom heritage, and in India, the handloom industry safeguards cultural traditions, sustains millions of artisans, and preserves ancient weaving techniques. A critical need arises to distinguish genuine handloom products, exemplified by the renowned “gamucha” from counterfeit power loom imitations in India's northeast to protect

this legacy. Our study aims to create an AI tool for effortlessly detecting authentic handloom items amidst a sea of fakes. Six deep learning architectures—VGG16, VGG19, ResNet50, InceptionV3, InceptionResNetV2, and DenseNet201—were trained on annotated image repositories of handloom and powerloom towels (17,484 images in total, with 14,020 for training and 3,464 for validation). A novel deep-learning model was also proposed. Despite respectable training accuracies, the pre-trained models exhibited lower performance on the validation dataset than our novel model. The proposed model outperformed pre-trained models, demonstrating superior validation accuracy, lower validation loss, computational efficiency, and adaptability to the specific classification problem. Notably, the existing models showed challenges in generalizing to unseen data and raised concerns about practical deployment due to computational expenses. This study pioneers a computer-assisted approach for automated differentiation between authentic handwoven “gamucha” and counterfeit power-loom imitations—a groundbreaking recognition method. The methodology presented not only holds scalability potential and opportunities for accuracy improvement but also suggests broader applications across diverse fabric products (Fig. 22).

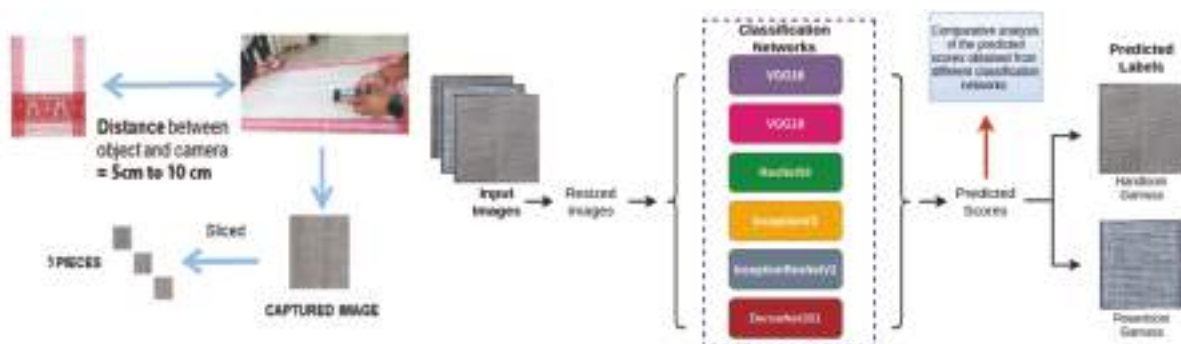


Fig. 22. Workflow of the Gamucha Fabric Recognition Methodology.

A. Mathematical Modelling

Coordinator: Dr. S. Das

C.1: Mathematical modelling of geophysical fluid flow

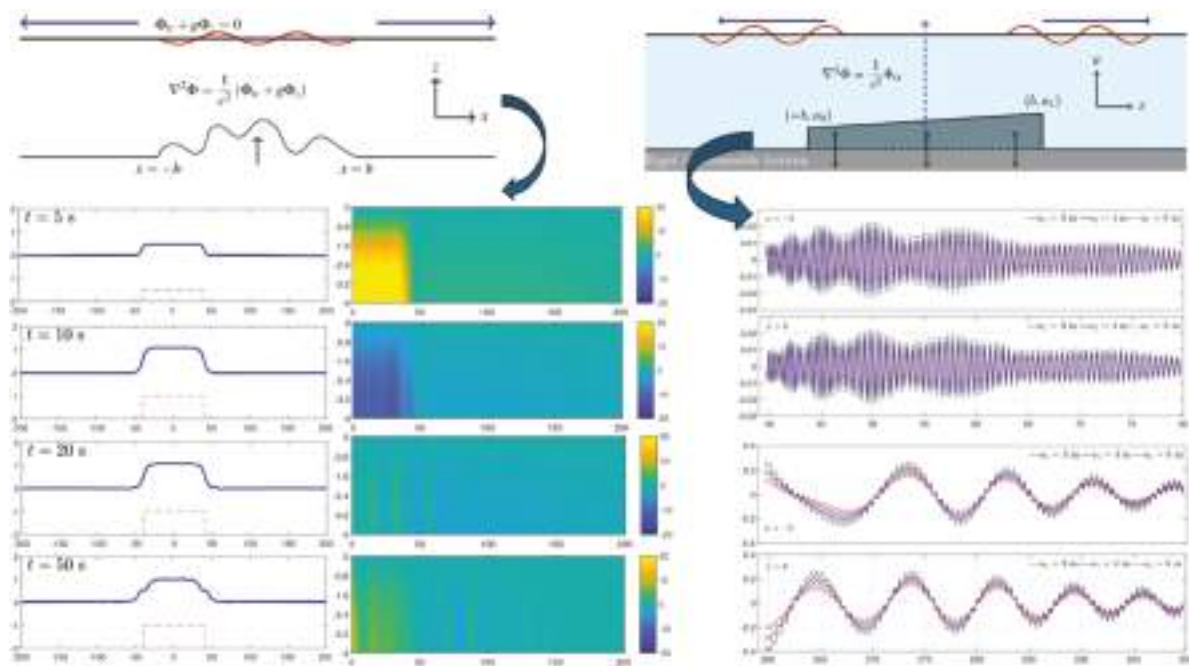


Fig. 23. The surface wave profile generated by the ocean bottom oscillation in a compressible ocean is shown.

Protection of the coastal environment is paramount due to its socioeconomic impact on the country, as most of the world population (approximately 2.4 billion within 100 kilometers) live near the coastline. Being susceptible to natural calamities like tsunami, the coastal areas need early warning for better preparation to minimize potential damage. Our group, in collaboration, is invested in simulating ocean surface wave propagation triggered by different types of submarine earthquakes and volcanic eruptions that could generate tsunami waves. Ocean water compressibility is included along with the generic spatiotemporal motion of the ocean floor. Focussing on the acoustic-

gravity wave signals generated in the process, which travels much faster than a typical tsunami wave and generates oscillations at the surface as well as pressure signature along the ocean floor, we aim to build an analytical model that could serve as a better initial condition for the existing numerical models. Being independent of time-stepping, the proposed model is highly efficient and accurate. Apart from generating the far-field behavior of the surface profile, the model can also eloquently depict the initial tsunami generation process. We plan to include ocean density stratification, soft ocean floor, and the impact of atmospheric pressure in the model (Fig. 23).

C.2: Long lead predictability of Indian Summer Monsoon Rainfall (ISMR) with emphasis on Northeast India Summer Monsoon Season rainfall (NEIR)

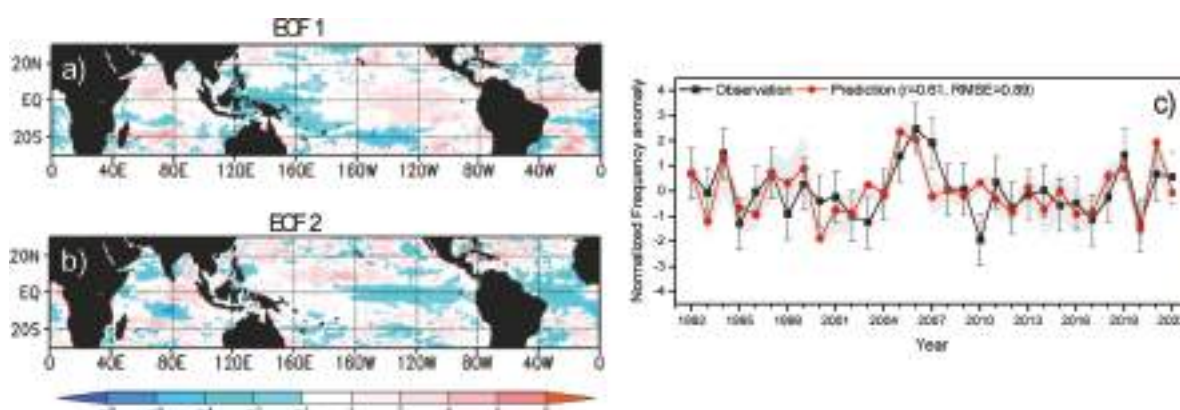


Fig. 24. Empirical Orthogonal Function (a) 1, (b) 2 of the correlation between tropical D20 and ERA anomalies up to 24-months lead. (c) Ensemble mean forecast (red) and min-max spread (grey) of Normalized frequency anomaly forecast over CI between 1992 and 2022 generated by the CNN model.

Over a billion people's agricultural productivity and living standards are significantly impacted by the spatial variability of precipitation during the summer monsoon season [June-September (JJAS)] over the Indian subcontinent. Despite the insignificant long-term trend of Indian summer monsoon rainfall (ISMR), studies indicate a substantial rise in the frequency of extreme rainfall events at the regional level despite a warming climate. Consequently, flood-prone regions like Central India (CI) remain vulnerable to the vagaries of ISMR. Hence, a skillful seasonal forecast of the frequency of extreme rainfall events over CI is highly anticipated. Using our predictor discovery algorithm, we discovered that the slowly varying global tropical recharge-

discharge oscillator (aka G-ENSO) governs the seasonal frequency of extreme rainfall events over CI, similar to the G-ENSO-ISMR relationship. We have created a deep-learning non-linear statistical model trained on the relationship between the predictor (global tropical 20°C isotherm (D20), representing G-ENSO) and predictand (JJAS seasonal frequency of extreme rainfall events over CI) from a large ensemble of Atmosphere-Ocean General Circulation Models (AOGCMs) and past observational dataset. Our model demonstrates the capability of identifying the significant precursors in the D20 predictor across the entire tropical basin for generating skillful forecasts of the predictand at a 1-month lead (Fig. 24).

RESEARCH OUTPUTS

Completed Projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Achievement
3D time-domain simulation of near-field ocean surface wave induced by sudden ocean floor disturbance or sudden pressure change in the atmosphere	Funding agency: SERB, SIRE Fellowship Total fund: Rs. 16,76,293/- Duration: 06 months PI: Dr. Santu Das	- Developed a unified theory to include the ocean compressibility and arbitrary ocean floor motion to generate 3D surface wave profile. - Impact of sudden ocean water depth on the surface wave propagation is shown. - Surface wave profile generated by a moving atmospheric pressure front is generated while considering the ocean water compressibility.

Ongoing Projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Goal
Fine Particulate Air Pollution Levels Prediction: Combining Artificial Intelligence and Statistical Methods	Funding agency: IASST; Total fund: Rs. 9.75 lakhs; Duration: 2 years; PI: Dr Lipi B Mahanta; Co-PI: Dr A. Devi	- To identify patterns and relationships between PM2.5 concentrations and their associated pollutants and meteorological factors. - To develop appropriate statistical and AI/ML models to predict PM2.5 concentrations based on historical data. - To evaluate the performance of the prediction models developed, various metrics such as accuracy, precision, and recall were used, and the one most applicable was suggested, reduce PM10 /PM 2.5 in ambient air.

Mathematical modelling of acoustic-gravity wave (AGW) propagation in the ocean: impact of ocean floor movement and ocean water density stratification	Funding agency: IASST Total fund: Rs. 1,90,000 Duration: 2 years PI: Dr. Santu Das	- Investigation of the impact of submarine earthquake fault's topography on the AGWs and ocean surface wave profile. - The transformation of the AGWs under the influence of ocean water density stratification.
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PUBLICATIONS

In cited journals

Author (s)	Title	Journal name	Volume & Issue no. /page no.	Month/ Year of publication	Impact Factor of the Journal
S. Mahanta, N. Kumar, G. Choudhury	An analytical approach of Markov modulated Poisson input with feedback queue and repeated service under N-policy with setup time	Quality Technology & Quantitative Management	21 (2)/ 257-285	03/2024	2.8
A. Begum, G. Choudhury	Analysis of an unreliable N – policy queue with setup period under Bernoulli schedule and re-service approach	Communications in Statistics-Theory and Methods	53 (1)/ 1-33	01/2024	0.8
S. Suhail, S. Das, S. Saha	Oblique wave trapping in a two-layer fluid: Effect of wave blocking	Ocean Eng.	295/ 116982	March/2024	5.0
S. N. Bora, S. Das, M. H. Meylan, S. Saha, S. Zheng	Time-dependent water wave scattering by a marine structure consisting of an array of compound porous cylinders	Phys. Fluid	35 (7)/ 077103	July/2023	4.6
D. Sharma, S. Das, B. N. Goswami	Variability and predictability of the Northeast India summer monsoon rainfall	Int. J. Climatol.	43 (11)/ 5248-5268	June/2023	3.609
S. Das, M. H. Meylan	Effect of static compression on tsunami waves: Two-dimensional solution	Phys. Fluid	35 (6)/ 066603,	June/2023	4.6

Book Chapters

Authors Name	Chapter Title	Book Title	Publisher	Year/Month of Publication
A. Begum,G. Choudhury	Reliability Analysis of a Batch Arrival Poisson Input Queue with Two Kinds of Heterogeneous Service and a General Start-Up Time Under N-policy	Advances in Functional Analysis and Fixed-Point Theory: An Interdisciplinary Approach	Springer Nature Singapore	2024/March

Popular article published in Newspaper/Magazine

Authors Name	Article Title	Newspaper/ Magazine name	Volume & Issue no./ page no.	Month/ Year of publication
D. Sharma, S. Das, S. K. Saha, B. N. Goswami	Artificial intelligence helps improve predictability of Indian summer monsoons	The Times of India	N/A	April/2023
D. Sharma, S. Das, S. K. Saha, B. N. Goswami	AI helps improve predictability of Indian Summer Monsoons	DST	N/A	April/2023

Contributory

Author(s)	Title	Conference name	Oral/poster	Date & Venue
S. Das and M. H. Meylan	Time-domain simulation of surface waves in a compressible ocean due to the motion of a circular portion of the ocean floor	38 th International Workshop on Water Waves and Floating Bodies (IWWF-2023) - online	Oral	May7-10, 2023/ The Michigan League, US.
S. Das	Atmospheric pressure-driven surface wave propagation in the compressible ocean including static compression	NSW ANZIAM2023 Annual Meeting	Oral	November 30-December 1, 2023/University of Wollongong, New South Wales, Australia.

Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/ Exhibitions	Date & Venue
Hirak J. Sarma	TEW - Multivariate analysis and linear algebra (2024)- National Centre for Mathematics (A joint centre of IIT Bombay and TIFR, Mumbai) - Advanced Training in Mathematics Schools	March 11-16, 2024/Gauhati University
Hirak J. Sarma	Two-Day National Workshop on“Latex For Technical Writing”, Dept. of Mathematics, GCC	January 30-31, 2024/Gauhati Commerce College
Hirak J. Sarma	National Conference on Mathematics and its Applications-II (2023)	November 07-08, 2023/Cotton University
T. Rahman	CME on Multi-Disciplinary Approach for Cancer Management	February 6, 2024/AIIMS Guwahati
Rajashree Dey	Workshop on “Study Design and Analysis of Clinical Trials-2023” by Kolkata Gynecological Oncology Trials and Translational Research Group.	December 21-23, 2023/ Sister Nivedita University, Kolkata
Ms. R. Das&Mr. I. H. Ahmed	Hands on Training in Modeling Fluid Flow Problems. (HTMF)	November 27-December 1, 2023/Department of Mathematics, School of Science, VIT, Vellore
Dr. S. Das	NSW ANZIAM2023 Annual Meeting	November 30-December 1, 2023/University of Wollongong, New South Wales, Australia.
Mr. D. Sharma	TROPMET-2023	November 22-24, 2023/Birla Auditorium, Statue circle, Jaipur
Mr. I. H. Ahmed& Mr. G. Gogoi	National Conference on Mathematics and its Applications-II. (NCMA-II)	November 7-8, 2023 /Department of Mathematics, Cotton University.
Ms. Ritika Das, Mr. I. H. Ahmed& Mr. G. Gogoi	International Workshop on Mathematical and Computational Methods in Science and Engineering. (IWMCMSE 2023)	June 2-13, 2023 /Department of Mathematics, IIT Ropar
Dr. S. Das	38 th International Workshop on Water Waves and Floating Bodies (IWWFBB-2023) - Online	May7-10, 2023/ The Michigan League, US

Contribution to World Database

Author	Title	Database	Link
Mr. D. Sharma	Convolutional Neural Network for long-lead forecast of Indian summer monsoon rainfall	GitHub	https://github.com/devabratsharma/LongLeadISMR

Presentation in Conferences/seminar

Invited talks

R.Dey, T. Rahman, L.B. Mahanta	Digestive Discomfort & Difficulty Swallowing: A Survey of Hypopharyngeal Cancer Patients	National Seminar on “The Role of Digital Literacy in Future-Ready Education: Challenges and Opportunities for Youth Minds”	January 23-24, 2024/ Bir Raghav Moran Government Model College, Doomdooma
T. Rahman, R. Dey, A.K. Das, L.B. Mahanta	Visualizing Oral Cavity Precancerous Lesions: A Study of Histopathological Images for Educational Outreach	National Seminar on “The Role of Digital Literacy in Future-Ready Education: Challenges and Opportunities for Youth Minds”	January 23-24, 2024/Bir Raghav Moran Government Model College, Doomdooma
T. Rahman, L.B. Mahanta	Evaluating the Deep Learning Models Performance for Segmentation of Oral Epithelial Dysplasia: A Histological Data-Driven Approach	3rd International Conference on Mathematical, Engineering and Management Sciences	January 27, 2024/ Visvesvaraya National Institute of Technology (Virtually)
Dr. S. Das	Introduction to wave blocking	International Workshop on Mathematical and Computational Methods in Science and Engineering(IWMCMSE 2023)	June 02-13, 2023, /Department of Mathematics, IIT Ropar.

Other activities

Visits to national/international institutes/laboratories

Faculty/Research scholar	National/international institutes/laboratories	Date
Dr. S. Das	University of Newcastle, Australia	September 15, 2023 - March14, 2024

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
Ms. Shruti Jaiswal	USTM	PG	Completed	21 Dec 2023 – 31 March 2024
Mr. Junaram Arandhara	Mahapurusha Srimanta Sankaradeva Viswavidyalaya	PG	Completed	21 Dec 2023 – 31 March 2024
Mr. Pragyan Bhardwaj	CSE, AEC, Jalukbari	UG	Completed	8 June, 2023 – 30 September 2023
Mr. Prabah Prasad Kalita	CSE, AEC, Jalukbari	UG	Completed	8 June, 2023 – 30 September 2023

Awards/Recognitions/Achievements

Student/Faculty	Achievements
Dr. S. Das	Received SIRE Fellowship to visit the University of Newcastle (UoN), Australia and to carry out collaborative research work. Fund: SERB, GoI.

List of PhD awardees

Name of student	Name of supervisor	Title of the thesis	Award giving university
Anjana Begum	Dr. G.Choudhury	Analysis of some unreliable single server queueing models rendering two-heterogeneous services under Bernoulli vacation policy	Gauhati University

LIFE SCIENCES DIVISION



LIFE SCIENCES DIVISION

The scientists of the Life Sciences Division (LSD) of IASST are pursuing research in two major thrust areas: **“Traditional and Modern Drug Discovery and Disease Diagnosis (TMDDDD)”** and **“Biodiversity and Ecosystem Research (BDER).”** Extensive research is being carried out on an exploration of natural resources, for example, traditional medicinal plants and snake venom for drug discovery against cardiovascular disease, neurological disorders, snakebite, and scorpion sting, along with the improvement of treatment of snakebite, scorpion sting and quality assessment of commercial snake and scorpion antivenom. TMDDDD group focuses on translational research towards the development of the phytopharmaceutical drug. The group also works on drug metabolism and pharmacokinetics (DMPK) studies in the GLP-like animal house facility to experimentally evaluate a drug candidate's intrinsic properties and toxicokinetics parameters. One of the most innovative anti-microbial approaches recently adopted by researchers in infectious diseases is quorum sensing inhibition (QSI). QSI work also goes on to disarm bacteria, rendering them less dangerous for the host while avoiding the selective pressure that antibiotic killing or antibiotic-mediated growth arrest entails.

North-east India has a vibrant diversity of ethnic groups with diverse traditional dietary habits. Some of these may be promoted as functional foods and beverages for the emerging market, with proper scientific interventions to understand their health benefits. Under the thrust areas of BDER, one group has focused on understanding the gut microbiome of these

ethnic communities and the development of functional foods and next-generation probiotics for better gut health. Our team has conducted nutritional characterization, safety assessment, and value addition of several promising food items. For commercial-scale production, several rural self-help groups (SHGs) with unemployed women and men have been formed and registered as societies facilitated by FSSAI certifications and trade licenses. Geographical indications (GI) have also been filed to protect their rights.

The Microbial Biotechnology research group is exploring extracellular antimicrobial metabolites produced by actinobacteria prevalent in the unique habitats of protected forests. The aim is to develop drug molecules effective against Methicillin-Resistant *Staphylococcus aureus* (MRSA), multi-drug resistant microbial pathogens, infectious diseases, and dermatophytes. Another goal of the research group is to prepare a microbial database, including biologically active secondary metabolite-producing organisms found in the unique ecological niches of North-East India and the long-term preservation of microbial bioresources. Environmental chemistry research group presently emphasizes the remediation of organic contaminants, more specifically hydrocarbons, dyes, and pesticides emerging from different industries by adopting green technology. The group also focuses on developing techniques for efficient sensing and adsorption of heavy metals, which are another class of major pollutants causing severe concern to the ecosystem.

LSD-1

BIODIVERSITY AND ECOSYSTEM RESEARCH

A. Gut microbiome and ethnic food

Coordinator: Dr. M. R. Khan

Northeast (NE) India is home to more than 300 ethnic groups with diverse traditional dietary habits, including fermented foods and beverages rich in prebiotics, probiotics, and bioactive compounds with health-promoting effects. Our research is focused on understanding the role of such ethnic dietary factors in gut microbiome modulation for better health.

A1. A traditional fermented bamboo shoot reduces intracellular fat accumulation via the AMPK signaling pathway.

We looked at the microbial and metabolite profiles and antiobesity properties of traditionally fermented bamboo shoot varieties of NE India. It was observed that these varieties have a high abundance of lactic acid bacteria of Firmicutes and Proteobacteria species, and also several aroma-active compounds, bioactive metabolites, short-chain fatty acids, and essential amino acids were detected. A variety named *Melye-amiley* significantly reduced intracellular lipid accumulation in cultured 3T3-L1 cells and also increased expression of lipolytic and browning regulator genes (Fig. 1). By activating the AMPK signaling pathway, it also upregulated thermogenic protein expression. It promoted mitochondrial biogenesis and fatty acid β -oxidation. These findings suggest that *Melye-amiley* has promising antiobesity effects, and future

research is necessary to identify the active ingredient(s) that may lead to new therapies to treat obesity.

A2. Heat-killed *Levilactobacillus brevis* MKAK9 and its exopolysaccharide increase miRNA-243 expression to downregulate insulin-like signaling and promote healthy aging in *Caenorhabditis elegans*.

In this study, we observed that a heat-killed probiotic bacterium *Levilactobacillus brevis* strain MKAK9 (abbreviated as HK MKAK9) isolated from fermented food, and its exopolysaccharide (EPS) promote longevity accompanied by improved hallmarks of healthy aging, including age-associated physical activity, improved resistance to biotic and abiotic stresses, and mitochondrial functionality in the model organism *C. elegans*. We employed a combination of RNA- and small RNA sequencing, proteomic analysis, lifespan assays on loss-of-function mutants, and quantitative RT-PCR to unveil the involved mechanisms (Fig. 2). HK MKAK9 and its EPS promoted longevity by downregulating the insulin-signaling pathway, resulting in improved proteostasis, autophagy, and lysosomal integrity that was partially regulated by microRNA (miRNA) mir-243. Additionally, HK MKAK9, its EPS-activated p38 MAPK, and its downstream transcription factor SKN-1 promotes stress resistance and immunity and improve cellular and mitochondrial redox state. This study indicates that HK MKAK9 and its EPS may be promoted as a potential postbiotic for treating age-associated pathologies.

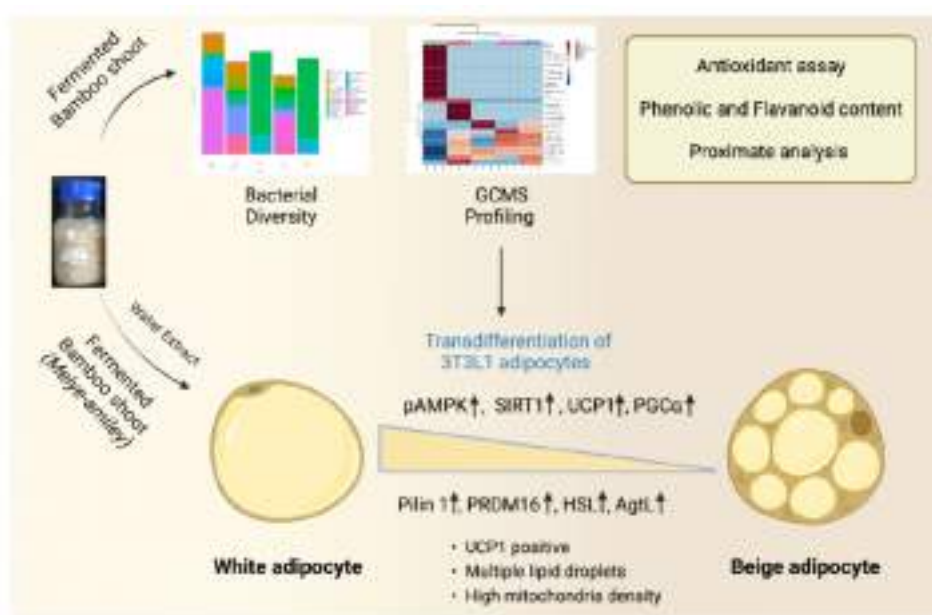


Fig. 1. Study the functional properties of the traditionally fermented bamboo shoot variety of Tripura, Melye-amiley, against obesity.

A3. Whole genome analysis of a potential probiotic *Lactiplantibacillus plantarum* JBC5 that induces healthy aging in *C. elegans*.

Previously, we reported that the bacterium *Lactiplantibacillus plantarum* JBC5 (LPJBC5) could enhance longevity in *C. elegans* by 27.81%, accompanied by improvements in the hallmarks of healthy ageing. Whole genome sequencing of LPJBC5 reveals the size to be 3.23Mb, GC content 44.55%, and encodes 3016 genes. The genome contains major carbohydrate-active enzymes, exopolysaccharide synthesis genes (*eps*), and genes related to stress response and antioxidant activity. Longevity-regulating genes, including *katE*, CAT (chloramphenicol acetyltransferase), *catB*, and their regulating pathways (MAPK signaling pathway), were detected. The genome was found to contain plantaracin (*pln*) operon for the production of antimicrobial bacteriocin and

various regions of secondary metabolite biosynthetic gene clusters. Identifying probiotic and longevity-associated genes suggests that LPJBC5 holds potential as a probiotic candidate (Fig. 3).

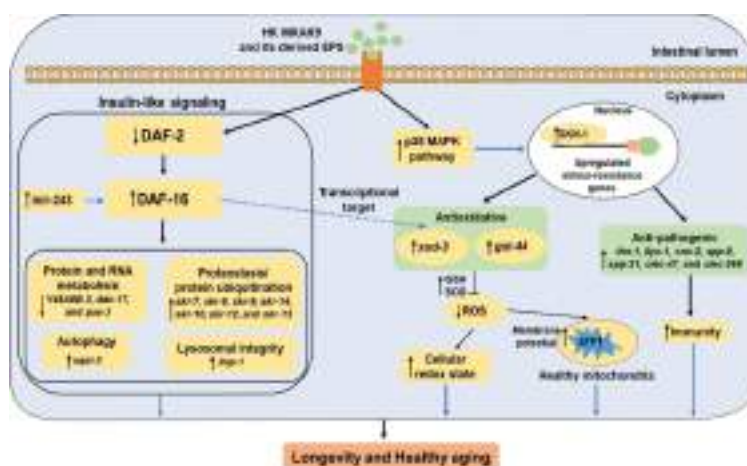


Fig. 2. Proposed mechanisms of MKAK9 in promoting longevity and healthy aging in *C. elegans*.

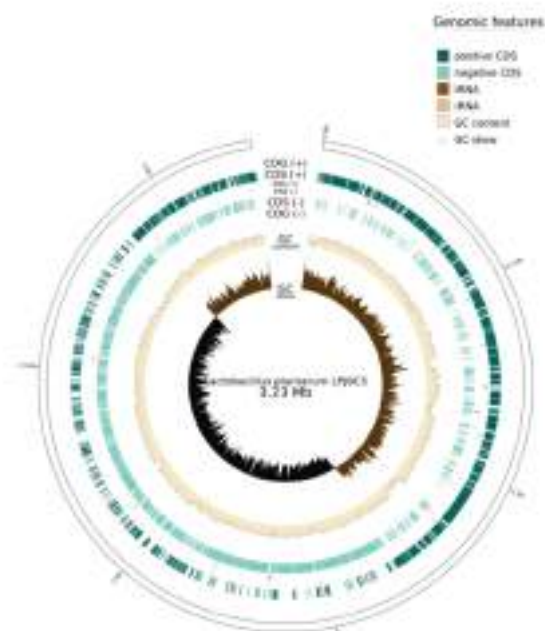


Fig. 3. Genetic map of *L. plantarum* JBC5 genome.

B. Environmental Chemistry

Coordinator: Dr. A. Devi

B1. Entrapment behaviours of trivalent and hexavalent Chromium from aqueous medium using Edible Alkali-Derived Activated Carbon of *Eichhornia crassipes* (Water Hyacinth).

This study delves into the adsorption capabilities of WHAC-BGA, an environmentally friendly activated carbon derived from an innovative edible alkali sourced from black gram ash, to remove Cr(III) and Cr(VI) ions from water bodies. Remarkable removal efficiencies were achieved, with a 95.12% removal rate for Cr(III) (at pH 7 and 298K) and a 99.6% removal rate for Cr(VI) (at pH 2 and 313K), utilizing an adsorbent dosage of 2 g L⁻¹. Equilibrium was reached within 180 minutes for Cr(III) and 240 minutes for Cr(VI) removal. The adsorption of Cr(III) ions primarily occurs through adsorption and electrostatic attraction of positively charged Cr(III) ions on the negatively charged adsorbent surface (at pH 7). In contrast, the removal of

Cr(VI) oxyanions is characterized by their adsorption onto the positively charged adsorbent surface (at pH 2), followed by reduction to Cr(III) ions through oxygen-containing functional groups such as C-O, C=O, and O-C=O on the WHAC-BGA surface. Moreover, the study demonstrates the reusability of the adsorbent material for up to three cycles, offering potential applications for sustainable water purification processes. This research contributes valuable insights into developing strategies for effectively mitigating chromium contamination in water sources, combining environmental responsibility with practical utility (Fig. 4).

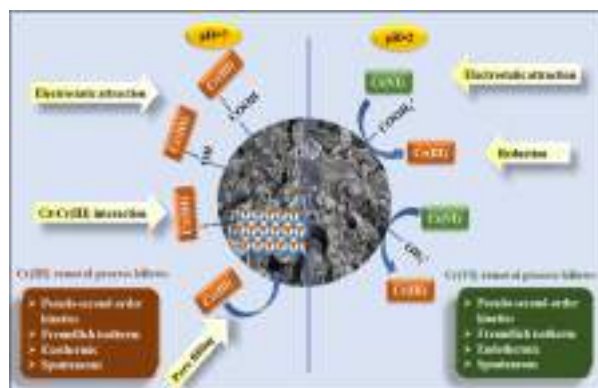


Fig. 4. Picture depicted adsorption mechanism of Cr(III) and Cr(VI) with the activated carbon.

B2. Green remediation techniques for petroleum hydrocarbon-contaminated formation water: understanding degradation and adsorption mechanisms

An innovative approach to remediate oilfield-produced water, a major environmental pollutant from the oil and gas industry, has been demonstrated in this study. The technique combines an invasive wetland plant (*Pistia stratiotes*) used in absorbing and metabolizing hydrocarbons in the oilfield formation water, biosurfactant from Indigenous Bacteria, making them more accessible for degradation, and

fertilizer NPK acts as a stimulator. All the components used in the technique are of biological origin, non-toxic, and green. The method's success is supported by the results of GC-MS analysis, which detected no hydrocarbon compounds in treated water. However, after treatment using the proposed combination 90.1% of the TPH was degraded, and the biomaterials adsorbed the remaining 9.9%. The technique completely degraded highly persistent and toxic PAHs to lower hydrocarbons. The pseudo-second-order kinetics and Langmuir isotherm represented the best-fitted equilibrium and kinetics models. The treatment technique significantly reduced Chemical Oxygen Demand from an initial concentration of 4480 mg/L to 249 mg/L, corresponding to 94% removal. Thus, this study would present a potential breakthrough in the ongoing battle against pollution caused by the oil and gas industry (Fig. 5).

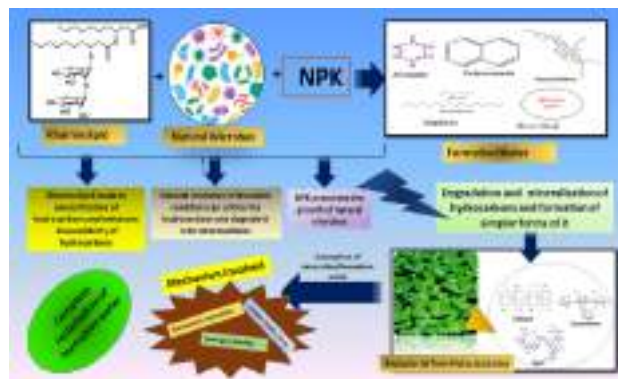


Fig. 5. Proposed mechanism for the interaction between formation water, biosurfactant, NPK, and biomaterial.

C. Tea-Microbe Interactions and Microbial Bioactive Metabolites

Coordinator: Dr. D. Thakur

D1. Screening of Actinomycetes Prevalent in

Selected Forest Ecosystems in Assam to Combat Multi-Drug-Resistant Microbial Pathogens

A total of 65 actinomycetes were isolated from two microbiologically unexplored forest ecosystems, namely the Pobitora Wildlife Sanctuary ($26^{\circ}12''$ – $26^{\circ}16''$ N and $91^{\circ}58''$ – $92^{\circ}05''$ E) and the Deepor Beel Wildlife Sanctuary (26.1177° N and 91.6494° E) in Assam. Among these, 19 isolates exhibited significant antimicrobial activity against multi-drug-resistant human test pathogens and clinical isolates. This study involved genome mining and GC-MS analysis of three potent actinomycete strains: *Streptomyces* sp. DBR11, *Streptomyces* sp. PBR1, and *Streptomyces* sp. PBR36 revealed a diverse range of bioactive chemical classes with therapeutic potential. GC-MS analysis showed that all three potent strains contained chemical compounds such as heterocyclic compounds, phenyls, steroids, glycosides, amides, and ketones. These classes are known for their significant antimicrobial, antitumor, antimalarial, antituberculosis, anticancer, and anti-inflammatory activities.

Similarly, whole-genome sequencing data of the three strains revealed a diverse array of biosynthetic gene clusters (BGCs) associated with producing biologically important secondary metabolites with high therapeutic applications. Furthermore, low minimum inhibitory concentration (MIC) values and scanning electron microscopy (SEM) analysis of the pathogen's cell surface morphology after treatment with extracts from the three strains suggested their potential as promising antimicrobial candidates against drug-resistant human pathogens (Fig. 6). These findings underscore the importance of these forest-derived actinomycete strains for future drug

discovery endeavors.

Ref.: R. Mazumdar, K. Saikia, D. Thakur.
Potentiality of Actinomycetes prevalent in

selected forest ecosystems in Assam, India, to
combat multi-drug-resistant microbial
pathogens.

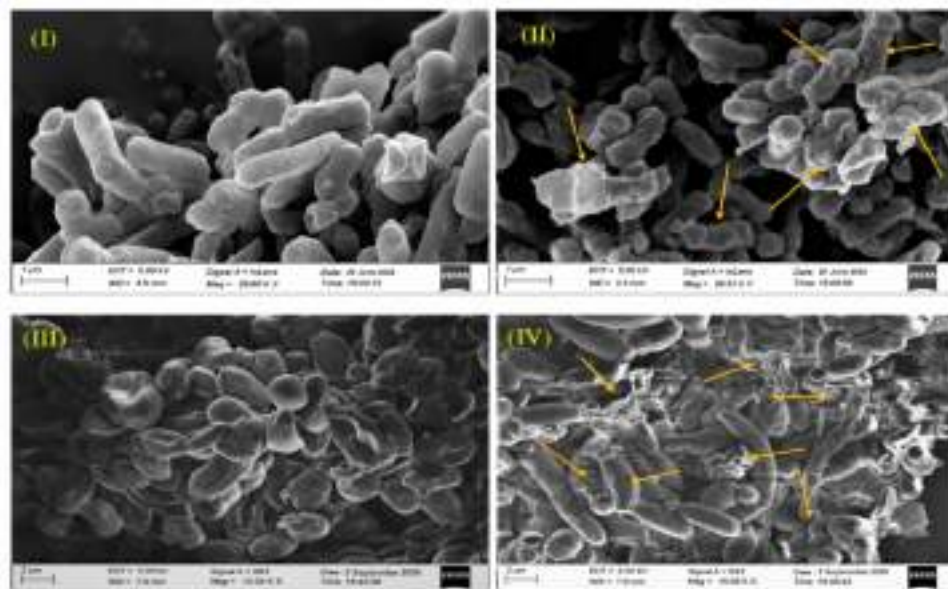


Fig. 6. Screening Electron Micrograph showing the effects of ethyl acetate extract of *Streptomyces* sp. PBR36: (I, III) without treatment; (II, IV) treatment against *Candida albicans* MTCC 227 and multi-drug resistant clinical isolate *Escherichia coli* (GNR19), respectively, with $1 \times \text{MIC}$ EtAc-PBR36. The Arrow line denotes ruptured cells after treatment.

C2. Broad Spectrum Antimicrobial Activity of Forest-dwelling Actinomycetia, *Streptomyces* sp. MNP32.

The Actinomycete isolate MNP32 was isolated from Manas National Park in Assam, India. Morphological observations and molecular characterization identified it as *Streptomyces* sp., showing a 99.86% similarity to *Streptomyces camponoticapitis* strain I4-30 based on 16S rRNA gene sequencing. This strain demonstrated broad-spectrum antimicrobial activity against various bacterial human pathogens, including critical priority pathogens listed by the WHO, such as methicillin-resistant *Staphylococcus aureus* (MRSA) and *Acinetobacter baumannii*.

Ethyl acetate extract analysis of *Streptomyces* sp. MNP32 (EA-MNP32)

revealed the disruption of test pathogen membranes, as evidenced by scanning electron microscopy, membrane disruption assay, and confocal microscopy. Cytotoxicity studies conducted on CC1 hepatocytes indicated that EA-MNP32 had a negligible effect on cell viability. Chemical analysis of the bioactive fraction using gas chromatography-mass spectrometry (GC-MS) identified two major compounds: Phenol, 3,5-bis(1,1-dimethylethyl)- and [1,1'-Biphenyl]-2,3'-diol, 3,4',5,6'-tetrakis (1,1-dimethylethyl)-, both known for their antimicrobial properties (Fig.7). The phenolic hydroxyl groups of these compounds were suggested to interact with the carbonyl group of cytoplasmic proteins and lipids, destabilizing and rupturing the cell membrane. These findings underscore the potential of exploring culturable actinobacteria

from the microbiologically under-explored forest ecosystems of Northeast India and highlight the bioactive compounds from

MNP32 as promising candidates for future antibacterial drug development.

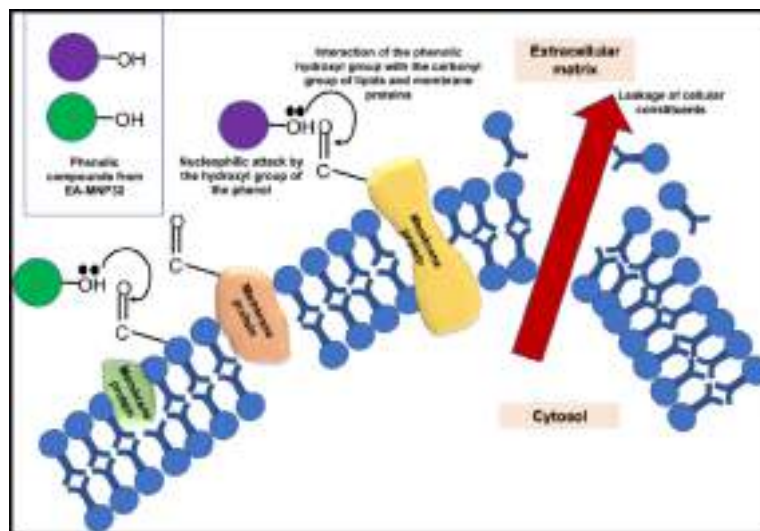


Fig. 7. A graphical representation of the proposed mechanism of action by ethyl acetate extract of Streptomyces sp. MNP32. The hydroxyl group of the phenolic compounds plays a crucial role in the interaction with the cytoplasmic membrane proteins and lipids. The hydroxyl group acts as a nucleophile and donates a pair of electrons to the carbonyl group of the proteins and lipids. This interaction causes dysfunction in the membrane and causes cell constituents to leak out of the cell, causing cell death.

D. Plant Bacteriology and Microbial Genetics

Coordinator: Dr. S.S. Pandey

D1: Deciphering Plant-Pathogen Molecular Interactions for Enhanced Agricultural Resilience in Northeast India

In the perpetual struggle between plants and microbial pathogens, disease outcomes are determined by molecular-level conflicts. Phytopathogenic microorganisms and host plants have evolved intricate strategies in this perpetual battle (Fig. 8). Our research aims to unravel virulence's genetic, molecular, and biochemical basis in phytopathogenic bacteria and decipher host responses. Utilizing genetic, biotechnological, and microbiological tools, we aim to identify virulence factors and elucidate the role of bacterial secretion systems in releasing these factors within host plants. Within the unique ecosystem of Northeast India,

where Assam stands as a beacon of biodiversity, plants play a pivotal role in the socio-economic fabric. Citrus, mulberry, and medicinal plants are not mere botanical entities but essential components of livelihoods, cultural heritage, and environmental sustainability. However, their productivity is threatened by microbial pathogens, posing significant challenges to agricultural productivity and food security in the region. To address these challenges, our research program adopts a holistic perspective, encompassing diverse thematic areas. We delve into the intricacies of vector-borne phloem-limited bacteria, unraveling the secrets of their lifestyle and virulence strategies. Through these endeavors, we aim to advance scientific knowledge and translate our findings into tangible solutions for sustainable agriculture and socio-economic development in Northeast India.

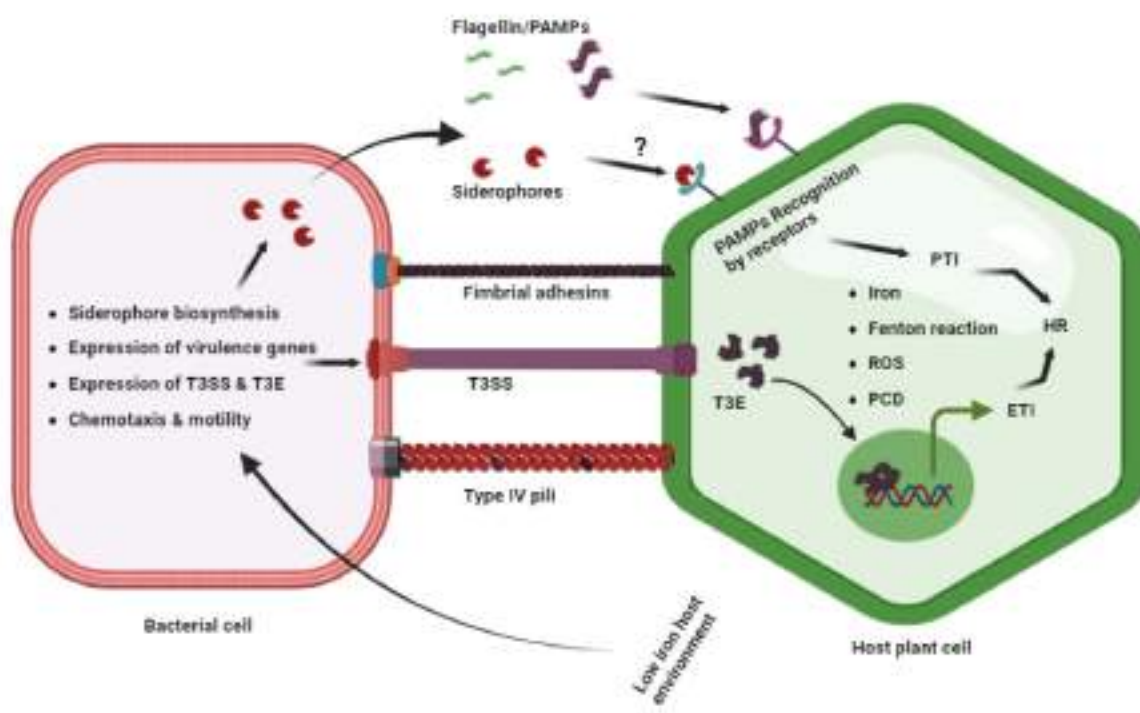


Fig. 8. Simplified schematic presentation delineating the interplay between plant organisms and phytopathogenic bacterial agents.

RESEARCH OUTPUTS

Extramural Projects

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Goal
Exploration of Actinomycetia prevalent in forest ecosystems and commercial tea clones for growth promotion in plants and combat against human and plant pathogens.	Funding agency: IASST in-house project Total fund: Rs. 18 Lakh Duration: 2023-2025 PI: Dr. Debajit Thakur	This project aims to investigate actinomycetes isolates from protected forest ecosystems in Assam, focusing on their production of biologically active metabolites and promotion of plant growth. Additionally, it aims to study endophytes from tea plants, characterizing, documenting, and preserving them systematically. The ultimate goal is to develop a "microbe-based bioformulation" for agricultural use and explore the potential for antimicrobial drug development using the antagonistic metabolites.
Continuation of Bioinformatics Infrastructure Facility Continuation of Bioinformatics Infrastructure Facility	Funding agency: IASST in-house project Total fund: Rs. 1625400/- Duration: 2020-2023 (extended upto June, 2024) Coordinator: Dr. Debajit Thakur Funding agency: IASST in-house project Total fund: Rs. 1625400/- Duration: 2020-2023 (extended upto June, 2024) Coordinator: Dr. Debajit Thakur	The project primarily focuses on advanced research in Bioinformatics, encompassing next-generation sequencing data analysis and structural biology. It has supported numerous research works at IASST, spanning genome assembly and annotation, transcriptomic data analysis, metagenomic studies, pipeline development, infrastructure, and database creation. Additionally, it has actively contributed to drug discovery, proteomics, and cheminformatics, leading to impactful publications. Equipped with high-throughput computing facilities, general-use computer systems, and premium software services, the center enables researchers to handle large-scale biological data, perform statistical analyses, and conduct other computational tasks efficiently.

1. ST/SC community development programme in IASST	Department of Science and Technology (under SEED division) Total fund: Rs.13,98,71,508.00 Duration: 03 years (11th November, 2020-10th November, 2024) PI/Coordinator: Coordinator: Prof. Ashis Kumar Mukherjee PIs: Prof. Mojibur R. Khan (component-I) Dr. Dhruba Sharma (component-II)	• Documentation of indigenous traditional knowledge (ITK) associated with various ethnic fermented foods, traditional herbs, and edible insects and protection of their IPR. • To develop a method of production of fermented functional foods and beverages with improved quality, safety, and health benefits. • To develop a method of production of herbs and edible insects of nutrition and health benefits. • To identify beneficial functional ingredients of heritage foods and beverages. • To train SC-ST people to adopt improved production methods and develop a commercialization strategy for marketing heritage food and beverages.
2. DBT-NER advance level institutional biotech hub(phase-II)	Department of Biotechnology (DBT) Total fund: 59,35,440.00, Duration: 03 years PI: Prof. Mojibur Rohman Khan	• Characterization of ethnic food and beverage and optimization of their production process • Value addition of available fruits and vegetables • Development of probiotics from ethnic foods and beverages.
DBT-Ramalingaswami Re-entry	Department of Biotechnology (DBT) Total Fund 1.23 Crore Duration: 5 years PI: Dr. Sheo Shankar Pandey	• To understand the CLAs transmission, in planta movement and colonization, host responses, and HLB symptom development using tolerant and susceptible citrus varieties. • To understand the genomics and phylogenetics of CLAs isolated from Indian citrus groves. • To investigate the secretion system and virulence functions in CLAs using the surrogate hosts. • To develop the culturing strategy for CLAs in laboratory conditions. • To screen the antimicrobial agents against CLAs and <i>Xanthomonas citri</i> subsp. <i>citri</i> in citrus cultivars grown in India.

Publications

Author (s)	Title	Journal name	Volume & Issue no. /page no.	Month/ Year of publication	Impact Factor of the Journal
M.B. Devi, H. K. Sarma, A. K. Mukherjee, M. R. Khan	Mechanistic insights into immune-microbiota interactions and preventive role of probiotics against autoimmune diabetes mellitus	Probiotics and Antimicrobial Proteins	15(4), 983-1000	May/2023	5.265
P. Sarkar, R. Kandimalla, Bhattacharya, R Wahengbam, M Dehingia, M.C. Kalita, N. C. Talukdar, R. Talukdar, M. R. Khan	Multi-omics analysis demonstrates the critical role of non-ethanolic components of alcoholic beverages in the host microbiome and metabolome: a human- and animal-based study	Microorganisms	11(6), 1501	June/2023	4.926
M.J. Bhattacharjee, A. Bhattacharya, B. Kashyap, M. J. Taw, W.H. Li, A.K. Mukherjee, M. R. Khan	Genome analysis of SARS-CoV-2 isolates from a population reveals the rapid selective sweep of a haplotype carrying many pre-existing and new mutations	Virology	20(1), 201	September/ 2023	5.9
S. Das, M.J. Bhattacharjee, A.K. Mukherjee, M.R. Khan	Comprehensive bacterial-metabolite profiles of Hawaijar, Bekang, and Akhone: A comparative study on traditional fermented soybeans of north-east India	World Journal of Microbiology and Biotechnology	39(11),315	September/ 2023	4.1
A. Bhattacharya, S. Das, M.J. Bhattacharjee, A.K. Mukherjee, M.R. Khan	Comparative pangenomic analysis of predominant human vaginal lactobacilli strains towards population-specific adaptation: Understanding the role in sustaining a balanced and healthy vaginal microenvironment	BMC Genomics	24,565	September/ 2023	4.5

S. Das, E. Ozkurt, T.K. Joishy, A.K. Mukherjee, F. Hildebrand, M.R. Khan	A single dietary factor, daily consumption of a fermented beverage, can modulate the gut microbiome within the same ethnic community	mSystems	8 (6), e0074523	October/2023	7.324
B. Devi, M. Goswami, S. Rabha, S. Kalita, H.P. Sarma, and A. Devi	Efficacious sorption capacities for lead from contaminated water: A comparative study using biowaste and its activated carbon as potential adsorbents.	ACS Omega	8 (17)15141-15151	April,2023	4.1
N. Sarma, M. Goswami, S. Rabha, R. Patowary, and A. Devi	Baseline study of water, soil, and identification of potential native phytoremediators of total petroleum hydrocarbon from oil-contaminated areas in the vicinity of Geleky oilfield of Assam.	Environ Monit Assess	195, article no 831	June,2023	3
B.Devi, S. Kalita, R. Deb, N. Sarma, A. Devi	An appraisal of COVID-19 lockdown on water quality of Deepor Beel-A Ramsar wetland of India	E-IJEP	43 (7), 640-647	July,2023	0.12
E. Das, S. Rabha, K. Talukdar, M. Goswami, A. Devi	Propensity of a low-cost adsorbent derived from agricultural wastes to interact with cationic dyes in aqueous solutions	Environ Monit Assess.	195, article no 1044	August, 2023	3
B.Devi, N.P. Baruah, A. Devi	Adsorptive removal of fluoride ions from aqueous solution using activated carbon supported tetrametallic oxide system	Chem. Eng. Res. Des.	197,380-391	September, 2023	3.9
R. Patowary, P. Jain, C. Malakar, A. Devi	Biodegradation of carbofuran by Pseudomonas aeruginosa S07: biosurfactant	Environm ental Science and	30, 115185-115198	October,2023	5.8

	production, plant growth promotion, and metal tolerance.	Pollution Research			
S. Sharma, B. Devi, D. Koiri, K. Sharma, K.G. Bhattacharyya, A. Devi	Visible light photocatalytic degradation of methylene blue and rhodamine B over silver-doped titanium dioxide nanocomposites supported on Fuller's earth	Environ Monit Assess	195, article no 1362	October,2023	3
S. Rabha, B. Devi, M. Goswami, E. Das, N. Sarma, and A. Devi	Ecologically Safe Removal of Lead Ions and Basic Fuchsin Dye from an Aqueous Solution Using Lippia alba Leaves.	Chemistry Select	8(43)	November 2023	2.307
M. Goswami, R. Patowary, K. Patowary, H.P.Sarma, S.Rabha, B. Devi, N. Sarma, E. Das, and A. Devi	Environment-friendly treatment of petroleum hydrocarbon contaminated formation water: Mechanisms and consequences for degradation and adsorption.	Water Resources and Industry	30,100224	December, 2023	5.1
B. Devi, A. K. Guha, A. Devi	Fluoride ion detection in aqueous medium: Colorimetric and turn-off fluorescent Schiff base chemosensor.	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy	305, 123448	December/ 2023	4.4
B. Devi, M. Goswami, and A.Devi	Entrapment behaviours of trivalent and hexavalent Chromium from aqueous medium using Edible Alkali-Derived Activated Carbon of Eichhornia crassipes (Water Hyacinth).	Environmental Science and Pollution Research.	31,6025–6039	December/ 2023	5.8

M.Goswami, B.Devi, N.P.Baruah, S.Rabha, A.Bharatwaj, A.Devi.	Waste to wealth strategies for removal of Pb ²⁺ ions from aqueous solution	Inorg. Chem. Commun	161 (112097) 20	January/ 2024	3.8
R. Das, P. Bharadwaj, D. Thakur	Insights into the functional role of Actinomycetia in promoting plant growth and biocontrol in tea (<i>Camellia sinensis</i>) plants	Archives of Microbiolo gy	206 (65) https://doi. org/10.100 7/s00203- 023- 03789-1	January/ 2024	2.8
R. Mazumdar, K. S a i k i a , D . Thakur	Potentiality of Actinomycetia prevalent in selected forest ecosystems in Assam, India to combat multi-drug-resistant microbial pathogens.	Metabolite s	13 (8):911 http s://doi.org/ 10.3390/m etabo1308 0911	August/ 2023	4.9
Pandey, S. S.	The role of iron in phytopathogenic microbe–plant interactions: insights into virulence and host immune response.	Plants	12 (17), 3173	Sept./ 2023	4.5
A.N. Konwar, S. Basak, S.G. Devi, J.C. Borah, D. Thakur	<i>Streptomyces</i> sp. MNP32, a forest-dwelling <i>Actinomycetia</i> endowed with potent antibacterial metabolites.	3 Biotech	13 (257) https://doi.o rg/10.1007/s 13205-023- 03670-4.	July, 2023	2.6
K. Saikia, S. Dey, S.N. Hazarika, G.K. Handique D. Thakur, A.K. Handique	Chemical and biochemical characterization of <i>Ipomoea aquatica</i> : genoprotective potential and inhibitory mechanism of its phytochemicals against α -amylase and α - glucosidase	Frontiers in Nutrition	21 (10):13049 03. https://doi.o rg/10.3389/f nut.2023.13 04903	December, 2023	4.0

Patent

Inventor(s)	Title	Patent Application No.	Provisional/final Patent grant No.
S. Deka & B. Das	Process For Remediation Of Formation Water For Its Safe Disposal And/Or Reuse	Indian Patent Application No.: 201931000192 Filed on: 02.01.2019	Granted Patent No. 489330. Date of Grant 26.12.2023
A.K. Mukherjee, B. Das, M.R. Khan	A Pharmaceutical Composition for the Treatment of Indian Red Scorpion Venom (Mesobuthus tamulus) Induced Toxicity	Indian Patent Application No.: 202331027004 Filed on: 12.04.2023	---
A. Devi, M Goswami, B. Devi	Preparation and characterization of activated carbon from Euryale Ferox Seed Coat (Seed Coat of Makhana) and Eichhornia Crassipes (Water Hyacinth) Applying a Novel and Effective Activating agent	Indian Patent Application No.: 202331063444 Filed on: 21.09.2023	---
A. K. Mukherjee, A. Patra, B. Rajbongshi, M. R. Khan	A Polyherbal Formulation for the prevention of toxic chemicals-induced neurodegeneration diseases	Indian Patent Application No.: 202431016767 Filed on: 08.03.2024	—

Popular article Published in Newspaper/Magazine

Authors Name	Article Title	Newspaper/Magazine name	Volume & Issue no./ page no.	Month/Year of publication
A. K. Mukherjee, M. R. Khan	Study throws new light on spread of covid delta variant.	Assam tribune		September 10, 2023
M. R. Khan and A. K. Mukherjee	Shattering boundaries: IASST's empowerment campaign for northeast India's tribal women	Dream 2047	26(10)/16-19	January, 2024

P. Bharadwaj	The potential use of Actinomycetia for biocontrol and enhancement of tea productivity	BioNE	ISSN: 2456-7264, Issue- 25	June, 2023
P. Bharadwaj	Boosting plant resilience: the remarkable role of ACC deaminase-producing bacteria	BioNE	ISSN: 2456-7264, Issue- 26	September, 2023

Contributory

Author(s)	Title	Conference Name	Oral/poster	Date & Venue
R. Das and D. Thakur	Actinobacteria <i>Streptomyces</i> sp. ATE-26 isolated from tea rhizosphere soil of Assam, India act as biocontrol agents against tea pest and fungal phytopathogens and also degrade chlorpyrifos.	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	Oral	December 22-23, 2023/AAU, Jorhat, Assam
P. Bharadwaj and D. Thakur	Bioprospecting endophytic Actinomycetia from Tea plants (<i>Camellia</i> spp.) for plant growth promotion, antagonistic potential and bioformulation for sustainable Tea productivity.	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	Oral	December 22-23, 2023/AAU, Jorhat, Assam
P. Bharadwaj, A. N. Konwar, S. Basak and D. Thakur	Endophytic Actinomycetia based bioformulation for sustainable tea productivity.	National Science Day 2024	Poster	February 28, 2024, IASST, Guwahati, Assam

Popular article published in Newspaper/Magazine Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
Prof. M. R. Khan	Global Bio- India (GBI) programme	December 4- 6, 2023/ New Delhi
Dr. M. J. Bhattacharjee	Global Bio- India (GBI) programme	December 4- 6, 2023/ New Delhi
Mr. A. Bhattacharya	Global Bio- India (GBI) programme	December 4- 6, 2023/ New Delhi
Prof. M. R. Khan	India International Science Festival 2023	January 17-20, 2024/Faridabad
Dr. M. J. Bhattacharjee	India International Science Festival 2023	January 17-20, 2024/Faridabad
Mr. S. Das	India International Science Festival 2023	January 17-20, 2024/Faridabad
Prof. M. R. Khan	22 nd North East Gastro meet-2024	February 2-4, 2024/ Vivanta
Prof. M. R. Khan	First All India Scientific and Technical Official Language Seminar (Rajbhasha Sangosti) 2024	March 21- 22, 2024/ Hyderabad
Prof. M. R. Khan	North East Startup Entrepreneurs Conclave	March 28, 2024/ Srimanta Sankaradeva Kalakshetra
M. Goswami and A. Devi	Biomaterial as activating agent for activated carbon preparation: A sustainable and eco-friendly approach, International Hybrid Conference on Bioeconomy, 2023	October 11-12, 2023/IIT, Guwahati
B. Devi and A. Devi	Adsorption of Fluoride Ions from Aqueous Medium Using Activated Carbon supported Tetrametallic Oxide System, International Hybrid Conference on Bioeconomy, 2023	October 11-12, 2023/IIT, Guwahati
S. Rabha and A. Devi	Application of plant-based material as an adsorbent for removal of organic and inorganic pollutants from wastewater, 3 rd International Conference on Waste, Energy and Environment-ICWEE-2023.	July 5-7, 2023/Satyabama Institute of Science and Technology, Chennai

N. Sarma and A.Devi	Baseline study of water, soil, and identification of potential native phytoremediators for evaluation and risk assessment study of petrochemicals in the vicinity of Geleky oilfield of Assam,3 rd International Conference on Waste, Energy and Environment-ICWEE-2023.	July 5-7, 2023/Satyabama Institute of Science and Technology, Chennai
E. Das and A. Devi	Low-Cost agricultural by-product for sequestration of cationic dyes from Wastewater ,3 rd International Conference on Waste, Energy and Environment-ICWEE-2023.	July 5-7, 2023/Satyabama Institute of Science and Technology, Chennai
A. Bharadwaj and A. Devi	Assessment of total organic carbon, soil enzymes and sediment characterization in Deepor Beel- Ramsar site, Assam ,3 rd International Conference on Waste, Energy and Environment-ICWEE-2023.	July 5-7, 2023/Satyabama Institute of Science and Technology, Chennai
M. Goswami and A. Devi	Green, efficient and low-cost remediation technique for the treatment of Oil field Formation Water: Mechanism and consequences for degradation and adsorption,3 rd International Conference on Waste, Energy and Environment-ICWEE-2023.	July 5-7, 2023/Satyabama Institute of Science and Technology, Chennai
B. Devi and A. Devi	Adsorption Removal of Pb(II) from wastewater using a low-cost activated carbon prepared from a discarded plant biomass and a novel activating agent,3 rd International Conference on Waste, Energy and Environment-ICWEE-2023	July 5-7, 2023/Satyabama Institute of Science and Technology, Chennai
P. Bharadwaj	Webinar on “ <i>Ralstonia solanaearum</i> : A soil born hidden enemy of the plants”	August 28, 2023/ (Online)
R. Das	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	December 22-23, 2023/ AAU, Jorhat, Assam
P. Bharadwaj	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	December 22-23, 2023/ AAU, Jorhat, Assam
P. Bharadwaj	India International Science Festival 2023	January 17-20, 2024/ DBT THSTI-RCB campus, Faridabad, Haryana
R. Das	Hands on workshop on “Molecular approaches to assess toxicity and stress in biological samples”	February 20-26, 2024/ Gauhati University, Assam

Contribution to World Database

Author (s)	Title	Database	
M.R. Khan	Whole genome sequence of <i>Lactiplantibacillus plantarum</i> MKTJ24	NCBI	PRJNA1036387
M.R. Khan	RNA sequence dataset of <i>Lactobacillus brevis</i> MKAK9	NCBI	PRJNA945374
M.R. Khan	Whole genome sequence of <i>Lactiplantibacillus plantarum</i> LPJBC5	NCBI	PRJNA1085560

Author (s)	Title	Database	Accession No.
R. Das, K. Saikia and D. Thakur	Whole genome sequencing and assembly of <i>Streptomyces</i> sp. ATE-26	NCBI	JARYZK0000000000 BioProject: PRJNA850848
A. N. Konwar and D. Thakur	Whole genome sequencing and assembly of <i>Streptomyces</i> sp. NP73	NCBI	JASITI0000000000 Bioproject: PRJNA957080
P. Bharadwaj and D. Thakur	16S ribosomal RNA gene, partial sequence	NCBI	OR054202- OR054205, OR145798- OR145811, OR880081- OR880092, PP263593- PP263607
A. N. Konwar and D. Thakur	16S ribosomal RNA gene, partial sequence	NCBI	PP474211-PP474254
C. J Devi and D. Thakur	16S ribosomal RNA gene, partial sequence	NCBI	Or461530- OR461535, OR166868- OR166870, OR145850- OR145854, OR059363- OR059368, OQ852758- OQ848238
C. J Devi and D. Thakur	Polyketide synthase gene (PKS-II)	NCBI	OR257081 Or257082
J. Saikia and D. Thakur	Polyketide synthase gene (PKS-II)	NCBI	Or594389

Presentation in Conferences/seminar

Invited talks

Faculty	Title	Programme Name	Date & Venue
Prof. M.R. Khan	The hidden world of microbiome	International microbiology day	September 15 , 2023/ Royal Global University
Prof. M.R. Khan	Methods of research work	One day workshop	November 17, 2023/ Pandu College
D. Thakur	Tea (<i>Camellia sinensis</i>)-Microbe Interactions: Insights into the functional characteristics of Tea associated microorganisms	International Symposium on Plant Microbe Interactions	November 24-25, 2023/ Department of Molecular Biology and Biotechnology, Tezpur University, Assam.
Dr. Sheo Shankar Pandey	Huanglongbing (HLB): Unraveling the Citrus Catastrophe – Understanding Virulence Mechanisms, Challenges in Management, and Strategies for Control.	International Symposium on Plant-Microbe Interactions.	25.11.2023; MBBT, Tezpur University, Tezpur, Assam, India
Dr. Sheo Shankar Pandey	Inside the Plant Microcosm: Unveiling the Molecular Realm of Bacterial Virulence and Lifestyle.	“Hands on workshop on Molecular Approaches to Access Toxicity and Stress in Biological Samples” Under DST-PURSE program.	23.02.2024; Gauhati University, Guwahati, Assam, India
Dr. Sheo Shankar Pandey	Huanglongbing (HLB): The citrus disease of greatest devastation- obstacles and approaches to control.	Asian citrus congress.	29.10.2023, Nagpur, Maharashtra, India
Prof. M. R. Khan			April 4, 2024/ Assam University

Other activities

Faculty/Research scholar	National/international institutes/laboratories	Date
Prof. M. R. Khan	Bharat biotech international ltd., Genome Valley, Hyderabad	22-03-2024
Dr. Asis Bala	Animal House, National Institute of Pharmaceutical Education and Research, (NIPER) Guwahati	August 10, 2023

M.Sc. / B. Tech Projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
Ms Kasturi Saha	Hansraj College	UG	Submitted	08/06/2023 to 07/08/2023
Ms Panchi Rani Narah	NIPER, Guwahati	PG	Ongoing	03/07/2023 to till date
Mr. V L Vibash Kalyaan	SRMIST, Chennai	UG	Submitted	01/01/2024 to 01/03/2024
S. Gopinath	SRM Institute of Science and Technology (Ramapuram Campus), Chennai	UG Intern	Completed	2 months
Mr. Surya S	Anna University	Intern	Completed	2 Months
Mr. Abhishek M. Upadhaya	Parul University	Intern	Completed	2 Months
Mr. Suraj Kumar Chatterjee	Techno India University	Project	Completed	6 Months
Mr. Aravind Sai Bharathy K	Anna University	Intern	Completed	2 Months
Ms. Pratiksha S. Kumkar	NIPER-Guwahati	Project	Ongoing	12 Months
Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
Kaushalendra Kumar Mishra	Teerthaker Mahaveer College of Pharmacy TMU Moradabad U.P	Intern	Completed	2 Months

Awards/Recognitions/Achievements

Shabiha Nudrat Hazarika	Biotechnology Ignition Grant-North East Region (BIG -NER) Special Call 2.0, a flagship programme of the DBT- Biotechnology Industry Research Assistance Council (BIRAC), Govt. of India in the year 2022-23.
Pranami Bharadwaj	1 st Position in Oral Presentation at National Conference on Women Scientists in Plant Health Management for Sustainable Development goals organized by Assam Agricultural University, Jorhat and Indian Phytopathological Society, New Delhi during 22 nd to 23 rd December, 2023 at AAU, Jorhat.
Pranami Bharadwaj	“Best Presentation Award” for Research Scholars Presentation 2023-24 in Life Sciences and secured 1 st prize on National Science Day (February 28, 2024) at IASST, Guwahati.

List of PhD awardees

Name of student	Name of supervisor	Title of the thesis	Award giving university	Date of Ph. D Awarded
Dr. Bhuwan Bhaskar	Prof. M.R. Khan	Study on microbial diversity of rice beer prepared by Tiwa community of Assam and its effects on mice gut microbes	GU	
Dr. Shabiha Nudrat Hazarika	Dr. Debajit Thakur	Assessment of endophytic bacteria prevalent in Tea (<i>Camellia sinensis</i>) and their effect on growth promotion and disease suppression	Cotton University, Guwahati	

LSD2

TRADITIONAL AND MODERN DRUG DISCOVERY
AND DISEASE DIAGNOSIS

A. Drug Discovery from Natural Resources

Coordinator: Prof. A. K. Mukherjee

A1. The invention of a novel therapeutic formulation for the better treatment of Indian red scorpion (*Mesobuthus tamulus*) venom-induced toxicity tested in *Caenorhabditis elegans* and rodent models

The sting of the Indian Red Scorpion (*Mesobuthus tamulus*) is a neglected public health issue in tropical and subtropical nations. Due to the shortcomings of traditional treatments involving anti-scorpion antivenom (ASA) and α 1-adrenoreceptor antagonists (AAA), a suitable formulation to enhance therapy for *M. tamulus* stings was invented.

A novel therapeutic drug formulation (TDF) of low doses of commercial ASA, AAA, and ascorbic acid has remarkably improved in neutralizing the *in vivo* toxic effects of *M. tamulus* venom (MTV) tested in *Caenorhabditis elegans* and Wistar strain albino rats *in vivo* models. The neutralization of MTV-induced production of free radicals, alteration of the mitochondrial transmembrane potential, and upregulated expression of genes involved in apoptosis, detoxification, and stress response in *C. elegans* by TDF surpassed the same effect shown by individual components of the TDF. Further, TDF efficiently neutralized the MTV-induced increase in blood glucose level within 30 to 60 min post-treatment, organ tissue damage, and necrosis, pulmonary edema in

Wistar rats, indicating its clinical application for effecting treating *M. tamulus* envenomation. This work shows for the first time that *C. elegans* can be used as a model organism to test a drug's ability to neutralize the venom of a neurotoxic scorpion.



Fig.9. Graphical abstract showing improvement of neutralization of toxicity of *M. tamulus* venom by a novel drug formulation.

A2. A correlation study in the Kamrup District of Assam, Northeast India, to understand the SAR-COV-2 viral load, antiviral antibody titer, and severity of Covid-19 symptoms after infection among the vaccinated people

The study aimed to determine how the antibody titer related to the cycle threshold (CT) values, infection severity, and demographics of confirmed COVID-19 patients from Kamrup District in Assam. Serum samples collected from COVID-positive participants (confirmed clinical case of SARS-CoV-2 infection) and between 4–6 weeks after 2nd dose of vaccination (Covaxin or Covisheild) were tested for the development of immunoglobulin class G (IgG) against SARS-CoV-2. The CT values, gender, and clinical symptoms-based scoring (CSBS) correlated with their IgG (antibody titer) value.

Around 48% of participants gained an antibody titer more than the threshold value and showed CT values between 18-25.

Moreover, the maximum distributed score above the average was found between the CT values 18-25. The IgG titer value differs significantly amongst the vaccinated population, which may depend upon their genetic and demographic variability (Fig. 10). It is possible to deduce that severe clinical manifestations led to high SARS-CoV-2 antibody titers between an intermediate viral load by comparing the peak of SARS-CoV-2 antibody titers with the clinical symptom-based score considered in the current investigation. Conversely, among the vaccinated trial subjects, high antibody titer could not result in severe symptoms or hospitalization, demonstrating the effectiveness of vaccination.

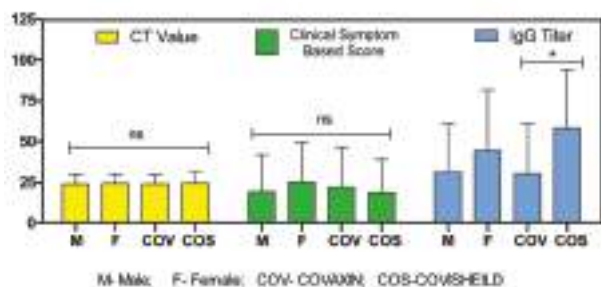


Fig.10. Comparison of CT value, clinical symptoms-based score, and IgG titer value in male vs female and Covaxin vs Covishield vaccinated populations. Values are represented as mean $\pm$ SD. $p < 0.05$, the significant difference in IgG titer value between Covaxin and Covishield vaccinated subjects.

A3. A survey of the clinical characteristics of envenomation, the epidemiology, and the in-patient treatment of snakebites in a typical secondary hospital in Assam

Due to a lack of data on the epidemiology of snakebites and their treatment in Assam, a secondary health-based retrospective study was conducted at Demow Model Hospital in Sivasagar, Assam. Snakebites reported between

April 2018 and August 2022 were reviewed using standard questionnaires based on the patient's socio-demographic information, clinical symptoms, and therapeutic history. One hundred thirty-nine patients (13.7%) out of the 1011 recorded cases of snakebite reported having experienced a venomous bite; of these, 92 patients (66.19%) reported having experienced a bite from a viper (Green pit viper and Salazar's pit viper), and 30 patients (21.5%) reported having been bitten by an elapid snake (Indian monocled Cobra, banded krait, and greater/lesser black krait). The rural settlements in the interior reported the highest percentage of snakebite cases (80.5%), recorded from July to September. All but one of the patients with accelerated snake envenomation responded well to treatment using glycopyrrolate, neostigmine, and commercial antivenom. Patients whom pit vipers had bitten were treated using repurposed medications, such as magnesium sulfate and glycerin compression dressing, because commercial polyvalent antivenom against the "Big Four" venomous snakes of India did not effectively neutralize the envenomation. Merely 3 (11.1%) instances had documented adverse serum responses.



Fig. 11. Schematic diagram of the snakebite cases reported in Demow Model Hospital, Sivasagar.

B. Traditional and modern drug discovery and disease diagnosis

Coordinator: Prof. J. C. Borah

B1. North-East delicacy “kuji thekera” to maintain a healthy gut by preventing

intestinal barrier disruption by lowering tight junction permeability and inflammation

In the Assamese kitchen, “kuji thekera” is a must-have item, and its scientific name is *Garcinia morella* (Gaertn.) Desr. North-Eastern India, *G. morella* fruit rind has been traditionally used for medicinal and cultural purposes. A study at IASST has revealed its potential to prevent and repair leaky gut. The study was conducted with 12 different medicinal plants traditionally used for treating stomach ailments, and *G. morella* was found to be the best among these 12 plant species. The study has demonstrated that *G. morella* and its bioactive compounds, garcinol, hydroxycitric acid, and hydroxy citric acid lactone, have the potency to prevent intestinal barrier dysfunction caused by enteric opportunistic pathogens, focusing on lowering tight junction permeability and inflammation. The study involved evaluating the antimicrobial activity of *G. morella* hydroalcoholic fruit extract against opportunistic pathogens and assessing its effect on transepithelial electrical resistance and dextran permeability in Caco-2 monolayers, an

established *in vitro* model for intestinal epithelial layer. The study provided new insight for developing nutraceuticals aimed at curing leaky gut, highlighting the potential of *G. morella* and its compounds in maintaining gut health (Fig. 12).

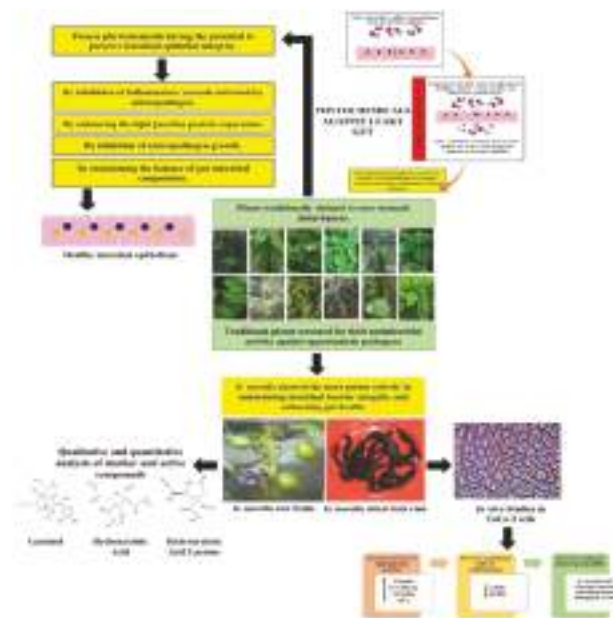


Fig.12. Summary of the study revealed that *G. morella* and its active constituent prevent intestinal barrier disruption by lowering tight junction permeability inflammation and protecting gut health.

B2. Anti-diabetic potential of *Phyllanthus niruri* L.

Phyllanthus niruri L., commonly known as Bhuiamla, is grown extensively in tropical and sub-tropical areas, and it is a significant ayurvedic medicinal plant for liver diseases, kidney problems etc. The study emphasizes the therapeutic potential of *Phyllanthus niruri* L. and its phytochemical(s) against insulin resistance conditions and impaired antioxidant activity, thereby aiding as an anti-hyperglycemic agent in targeting T2DM. From the most active ethyl acetate fraction, three

compounds were identified: compound 1 is 1-O-galloyl-6-O-luteoyl- β -D-glucoside; compound 2 is brevifolincarboxylic acid; and compound 3 is ricinoleic acid. PNEAF-treated IR C2C12 myotubes and STZ-induced Wistar rats elevated SIRT1, PGC1- α signaling cascade through phosphorylation of AMPK and GLUT4 translocation, resulting in insulin sensitization. Marker compounds isolated from *P. niruri* and its enriched ethyl acetate fraction acted as ROS scavenging agents helped in attenuating insulin resistance conditions in C2C12 myotubes as well as in STZ-induced Wistar rats by restoring glucose metabolism (Fig. 13).

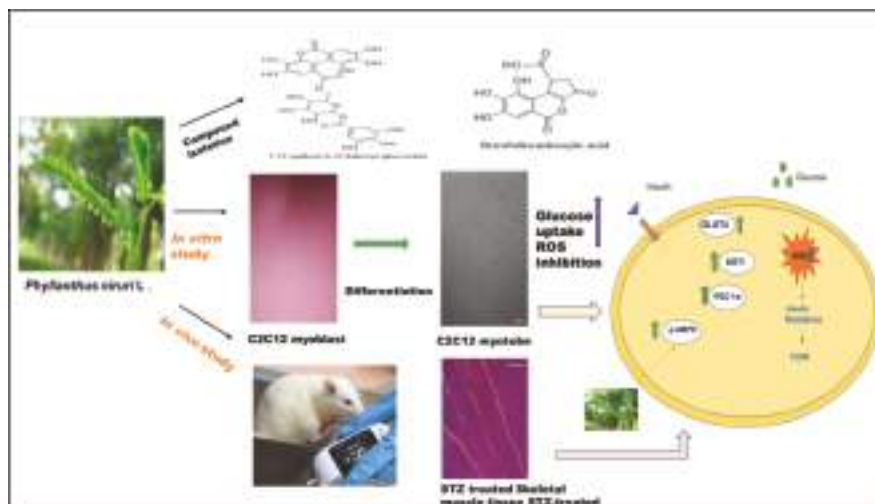


Fig. 13. Summary of the study revealed that *Phyllanthus niruri* L. and its active constituent mediates antihyperglycemic activity via regulation of SIRT1, PGC1- α signaling cascade, and free radical scavenging property.

C. Pharmacology and Drug Discovery.

Coordinator: Dr. A. Bala

C1. Repurposing Monoamine Oxidase Inhibitors (MAOIs) for the simultaneous management of rheumatoid arthritis and depression

MAO is an enzyme group that oxidizes amines in our bodies. MAO inhibitors treat depression, Parkinson's disease, and other mental disorders. RA is linked to depression and elevated MAO levels. Inhibiting MAO can reduce inflammation and pain associated with RA and improve overall mood and quality of life.

Dr. Asis Bala from the Pharmacology and Drug Discovery Research Laboratory at the Institute of Advanced Study in Science and Technology, Guwahati, India, recently published two articles on using monoamine oxidase inhibitors (MAO-Is) to manage rheumatoid arthritis (RA). The reports highlight the available approved therapy for various MAO-I medications treating different Central Nervous System disorders and experimentally validate the MAO-I's role in attenuating the

COX-2 enzyme by modulating H_2O_2 -mediated NF- κ B signaling pathway in animal models of RA.

Drug development is time-consuming and expensive. Repurposing existing drugs is a more cost-effective approach that is being researched by many scientists. Pre-clinical studies show that MAO inhibitors can significantly reduce symptoms of RA by reducing oxidative stress and inflammation (Fig. 14).

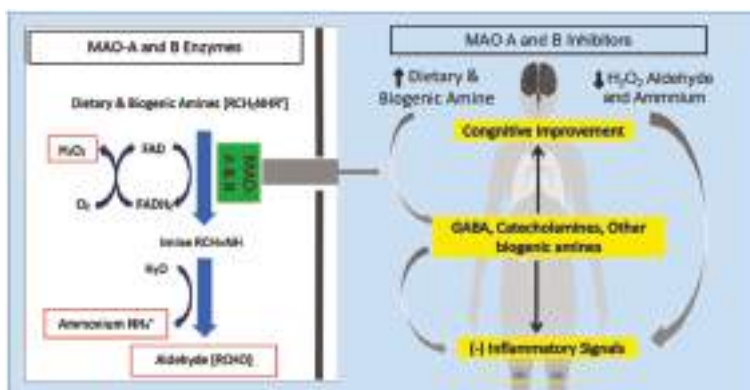


Fig. 14. Schematic representation of MAO-mediated biochemical reactions and its inhibition altered cognitive improvement and suppression of inflammatory signals.

Based on a clinical case study and pre-clinical validations, regulatory intervention is recommended to begin clinical trials for the simultaneous management of depression and RA using MAO-Is.

C2. Key players in Diabetic Neuropathy: Exploration of the Role of Protein Kinase C (PKC), AMP-activated protein kinase (AMPK) and TGF- β

Dr. Asis Bala and his team explored the role of Protein Kinase C, AMP-activated protein kinase, and TGF- β in regulating Diabetic Neuropathy, focusing on Neuroinflammation and Allodynia. They discussed how PKC and TGF- β regulate Diabetic Neuropathy caused by high glucose concentrations due to persistent hyperglycemia.

Hyperglycemia causes a sequence of events that lead to a shortage of the primary antioxidant in the nervous tissue, GSH. This leads to oxidative stress and a slowing down of conduction in the nerve. The increment in the quantity of DAG stimulates PKC, which activates TGF- β ,

producing the transcription machinery of the nerve cells via phosphorylation of stress genes C-Jun Kinases (JNK) and heat shock proteins (HSP). All these events lead to oxidative stress-mediated cytokine release and inhibition in nitric oxide production, thereby weakening endothelial function and capillary vasodilation. The schematic representation is shown in (Fig. 15.)

Diabetes causes changes in blood vessels, leading to Diabetic Vasculopathy that triggers the activation of DAG and PKC, causing Allodynia, Hyperalgesia, and Painful Diabetic Neuropathy. PKC inhibition could be a potential therapeutic approach to managing Diabetic Neuropathy, but more research is required to develop safe PKC inhibitors.

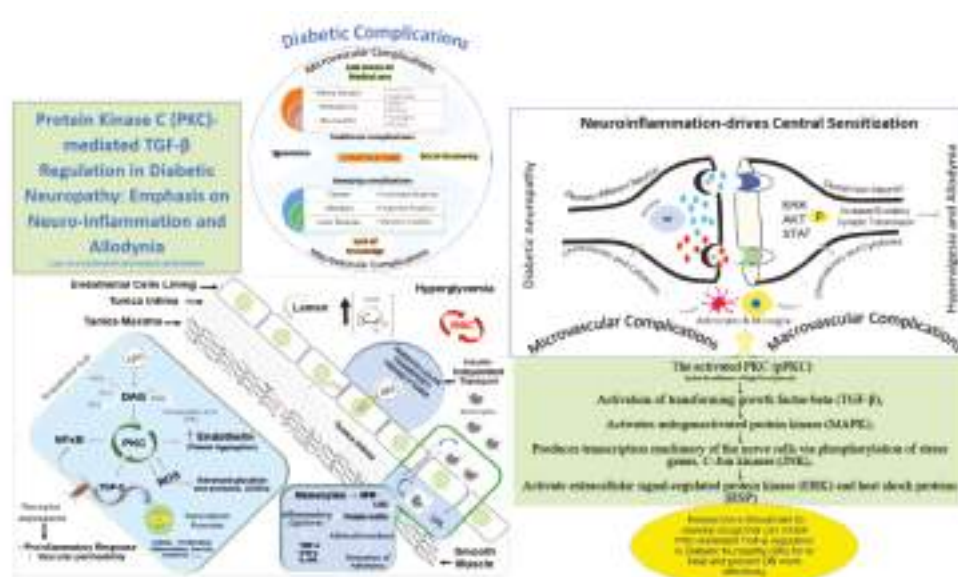


Fig. 15. Schematic representation of Protein Kinase C (PKC)-mediated TGF- β Regulation in Diabetic Neuropathy: Emphasis on Neuro-inflammation and Allodynia.

RESEARCH OUTPUTS

Extramural Projects

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Goal
Studies on the potency of natural and synthetic compounds as antidotes for neurotoxic snake and scorpion venoms	Funding Agency: IASST Core Grant; Total fund: Rs.12 lakhs Duration: 2 Years PI/ Coordinator: Prof. A. K. Mukherjee	• Screening of the ethnomedicinal plants for their in vivo inhibitory activity against neurotoxic snake and scorpion venom in C. elegans model. • Bioactivity-guided fractionation of selected medicinal plant extracts is used to identify the active fraction, and phytochemical analysis of such fraction(s) is used to identify the lead molecules. • Effects of natural and synthetic compounds and a combination of such compounds/bioactive fractions in inhibiting the neurotoxic venoms in the C. elegans model.
Studies on the neuroprotective potential of natural and synthetic compounds	Funding Agency: IASST Core Grant, Total fund: Rs.13 lakhs; Duration: 2 Years; PI/Coordinator: Prof. A. K. Mukherjee	• Assessment of neuritogenesis and neuroprotective activities of crude extracts of traditional medicinal plants /synthetic compounds and bioactivity-guided fractionations of crude extracts for the identification of the most active fraction • Identification and quantitation of major compounds in active fraction(s). • Exploration of the mechanism of neuroprotection of an active formulation of natural compounds/ bioactive fractions /synthetic compounds against pesticide-induced toxicity in vivo models.

		Assessment of pre-clinical toxicity of selected natural and synthetic compounds/formulations.
Development of layered double hydroxide (LDH) nanoclays for topical delivery of RNAi for sustained protection of economically important plants against pest attack	DBT 42 Lakh PI/Coordinator: Dr. Rajiv Borah Dr. Asis Bala	- Synthesis and physicochemical characterization of nanoclays of Mg-Al-NO₃ (MA) LDHs and Zn-Al-NO₃ (NZA) LDHs. Degradation of Mg-Al-NO₃ (MA) LDHs nanoclays was confirmed under environmental condition, which is the essential feature for releasing loaded dsRNA into it. - Vital gene fragments of mustard aphid (<i>Lipaphis erysimi</i>) such as AchE, vATPase, SHP, C002, Cathepsin-L were successfully isolated and cloned followed by bacterial expression and purification of low-cost dsRNA (resulting PCR amplicons of each gene in the range of ~400-900 bp). The dsC002 and dsVATP were successfully loaded into MA and NZA nanoclays, which was verified by agarose gel electrophoresis. - Topical application of different “NanoBioClay” formulations of dsC002-MA, dsVATP-MA, dsC002-NZA and dsVATP-NZA were found to protect Mustard plants from aphid infestation when tested in field grown Mustard plants. The lab-scale efficacy and safety of the prepared nanobioclays were confirmed. Particularly, the compatibility of the nanobioclays was validated against Mustard plant.
Natural and synthetic inhibitors of SGLT2 for the treatment of diabetic nephropathy and related complications	Funding Agency: IASST Core Grant, Total fund: Rs.9 lakhs; Duration: 2 Years; PI/Coordinator:Prof . Jagat C.Borah	Bioactivity guided fractionation of the crude extract to identify the most active fraction and phytochemical analysis of the active fraction.

		• In vitro and in vivo efficacy study of active fraction and isolated compounds against SGLT • 2To study the effects of SGLT2 inhibitors for anti-coagulant and thrombolytic properties
Preclinical evaluation of selected medicinal plants based on Indian System of Medicine (ISM) used for treatment of obesity and diabetes	Funding Agency: IASST Core Grant, Total fund: Rs.9 lakhs; Duration: 2 Years; PI/Coordinator:Prof . Jagat C.Borah	• To prepare marker compound(s) assisted standardized active fraction from the selected medicinal plants. • To evaluated the anti-diabetic potential of the enriched fraction(chemical marker assisted) / isolated constituent(s) in (in the relevant cell lines) Wistar mice followed by the underlying mechanism of action along with toxicity study (and). • Linking the effects of medicinal plant extract in metabolic disease and gut microbiome.

Publications

Author (s)	Title	Journal name	Volume & Issue no./ page no.	Month/ Year of publication	Impact Factor of the Journal
A. Roy, M. R. Khan, A. K. Mukherjee	Recent Advances in the Application of Microbial Biosurfactants in Food Industries: Opportunities and Challenges.	Food Control	110465	September, 2024	6.0
A. Patra, A. Bala, M.R. Khan, A. K. Mukherjee	A correlation study to comprehend the SAR-COV-2 viral load, antiviral antibody titer, and severity of Covid-19 symptoms post-infection amongst the	Endocr Metab Immune Disord Drug		January, 2024	2.0

	vaccinated population in Kamrup District of Assam, Northeast India.				
P. Baruah, A. Patra, S. Barge, M. R. Khan, A. K. Mukherjee	Therapeutic potential of bioactive compounds from the edible mushrooms to attenuate SARS-COV-2 infection and some complications in Coronavirus disease (COVID-19)	J. Fungi	9(9), 897	August, 2023	4.7
B. Das, D. Madhubala, M. Mahanta, A. Patra, U. Puzari, M. R. Khan, A. K. Mukherjee	A Novel Therapeutic Formulation for the Improved Treatment of Indian Red Scorpion (Mesobuthus tamulus) Venom-Induced Toxicity-Tested Caenorhabditis elegans and Rodent Models.	Toxins	15(8), 504	August, 2023	4.2
H. Kakati, S. Giri, A. Patra, S. J. Taye, D. Agarwalla, H. Baruah, G. Choudhary, B. Kalita, A. K. Mukherjee.	A retrospective analysis of epidemiology, clinical features of envenomation, and in-patient management of snakebites in a model secondary hospital of Assam, North-east India.	Toxicon	230, 107175	May, 2023	3.035
R. Patowary, A. Devi, A., Mukherjee, A. K.	Advanced bio-remediation by an amalgamation of nanotechnology and modern artificial	Environ Sci Pollut R	30(30),7445 9-7448	May, 2023	5.19

	intelligence for efficient restoration of crude petroleum-oil contaminated sites: A prospective study				
J. Castro-Amorim, A. Oliveira, A. K. Mukherjee, M. J. Ramos, P. A. Fernandes.	Unraveling the reaction mechanism of Russell's viper venom factor X activator: a new paradigm for the reactivity of zinc metalloproteinases?	J. Chem. Inf. Model.	63 (13) 4056–4069	April, 2023	5.6
M.J. Bhattacharjee, A. Bhattacharya, B. Kashyap, M. J. Taw, W.H. Li, A.K. Mukherjee, M. R. Khan	Genome analysis of SARS-CoV-2 isolates from a population reveals the rapid selective sweep of a haplotype carrying many pre-existing and new mutations	Virology	20(1), 201	September/2023	5.9
A. Bhattacharya, S. Das, M.J. Bhattacharjee, A.K. Mukherjee, M.R. Khan	Comparative pangenomic analysis of predominant human vaginal lactobacilli strains towards population-specific adaptation: Understanding the role in sustaining a balanced and healthy vaginal microenvironment	BMC Genomics	24,565	September/2023	4.5
D. Basumatary, B. Kashyap, P. Baruah, J.C. Borah	<i>Garcinia morella</i> dried fruits in preventing intestinal barrier disruption by lowering tight junction permeability and inflammation	Food Biosci	57(103408)	December, 2023	5.2

D. Swargiary, B.Kashyap, P. Sarma, S.A.Ahmed, S. Gurumayum, S. Barge, D. Basumatary, J.C.Borah	Free radical scavenging polyphenols isolated from <i>Phyllanthus niruri</i> L. ameliorates hyperglycemia via SIRT1 induction and GLUT4 translocation in <i>in vitro</i> and <i>in vivo</i> models	Fitoterapia	173(105803)	January, 2024	3.4
B.Deka, P.Sarma, P.Manna, J.C.Borah, N.C. Talukdar	Alliin enriched standardized fraction of <i>Allium hookeri</i> regulates the glucose homeostasis via upregulating hepatic glutathione pool	Phytomedicine Plus	3(100466)	May, 2023	--
A.K.Dutta, P.P.Dutta, B.Pathak, D.Barman, P.Baruah, D.Devi, J.C. Borah	Commercially important medicinal plants of North East India and their current applications – A review	Indian Journal of Natural Products and Resources	14(2) 133-147	June, 2023	0.8
M.J. Alam, Parul Kamboj, S. Sarkar, S.K. Gupta, S.S. Kasarla, S. Bajpai, D. Kumari, N. Bisht, S. S Barge, B.	Untargeted metabolomics and phenotype data indicate the therapeutic and prophylactic potential of <i>Lysimachia candida</i> Lindl. on high-fat high fructose-	Mol. Omics	19(787-799)	July, 2023	2.9
Kashyap, B. Deka, S. Bharadwaj, S. Rahman, P. P.Dutta, J.C.Borah, N.C. Talukdar, Y.Kumar, S.K Banerjee	-induced metabolic syndrome in rats.				

D. Konwar, P.Sarma, J.C.Borah, U.Bora	Halogen bonding assisted site-selective C-3 triaryl methylation of indoles and N-triaryl methylation of imidazoles†	Org Biomol Chem	21(6197-6204)	July,2023	3.2
D. Biswas, B.G. Somkonwar, J.C.Borah, P.K Varadwaj, S. Gupta, Z.A. Khan, G. Mandal, A.Chattoraj, L.	Phytochemical mediated modulation of COX-3 and NFκB for the management and treatment of arthritis	Scientific Reports	13(13612)	August, 2023	4.6
Bala A	A need for clinical trial: re-purposing the Monoamine Oxidase Inhibitors (MAO-I) for rheumatoid arthritis (RA).	Inflammopharmacology	31(6):3367-3370	December 2023	5.8
Bala A	Importance of protein kinase C (PKC) in phosphorylation of AMP-activated protein kinase (AMPK) in endocrine control	Endocrine	83(3):828	October 2023	
Changkakoti L, Das JM, Borah R, Rajabalaya R, David SR, Balaraman AK, Pramanik S, Halder PK, Bala A.	Protein Kinase C (PKC)-mediated TGF-β Regulation in Diabetic Neuropathy: Emphasis on Neuro-inflammation and Allodynia.	Endocr. Metab .Immune. Disord. Drug Targets	DOI 10.2174/0118715303262824231024104849. (Epub ahead of print)	November 2023	1.8
Patra A, Bala A, Khan MR, Mukherjee AK.	Correlation Study to Comprehend the SAR-COV-2 Viral Load, Antiviral Antibody Titer, and Severity of COVID-19	Endocr. Metab .Immune. Disord. Drug Targets	DOI: 10.2174/0118715303281124231213110004. (Epub ahead of print)	January 2024	1.8

	Symptoms Post-infection Amongst the Vaccinated Population in Kamrup District of Assam, Northeast India.				
Pramanik S, Bala A, Pradhan A.	Zebrafish in understanding molecular pathophysiology, disease modeling, and developing effective treatments for Rett syndrome	J Gene Med.	26(2):e3677	February 2024	3.5
Gayen S, Jana S, Das Gupta B, Ghosh A, Kar A, Bala A, Mukherjee PK, Halder PK.	Exploration of anti-diabetic activity and metabolite profiling of Brugiera cylindrica (L.) Bl.-in vivo anti-diabetic activity, exploration of molecular mechanism, and network pharmacological analysis.	J Pharm Pharmacol	28:rgae030	March 2024	3.3
Bala A	Regulatory role of peroxynitrite in advanced glycation end products mediated diabetic cardiovascular complications	World J Diabetes	15;15(3):572-574	March 2024	4.2
Pandey, S. S.	The role of iron in phytopathogenic microbe-plant interactions: insights into virulence and host immune response.	Plants	12 (17), 3173	Sep 2023	4.5

Patent

Inventor(s)	Title	Patent Application No.	Provisional/final Patent grant No.
A.K. Mukherjee, B. Das, M.R. Khan	A Pharmaceutical Composition for the Treatment of Indian Red Scorpion Venom (Mesobuthus tamulus) Induced Toxicity	Indian Patent Application No.: 202331027004 Filed on: 12.04.2023	---
A. K. Mukherjee, A. Patra, B. Rajbongshi, M. R. Khan	A Polyherbal Formulation for the prevention of toxic chemicals-induced neurodegeneration diseases	Indian Patent Application No.: 202431016767 Filed on: 08.03.2024	---
S. Kalita, R. Kandimalla, K. Sharma, N. C.Talukdar & J.Kotoky	Poly Herbal Formulation For The Treatment Of Dermatophytic Infections	Indian Patent Application No.: 201631008545 Filed on: 11.03.2016	Granted Patent No. 488270. Date of Grant 22.12.2023
A. Hazarika, H. Kalita, S. Kalita, R. Kandimalla, D. Devi & R. Devi	A Method For Preparing Antimicrobial Suture Biomaterial And Antimicrobial Suture Biomaterial Obtained Thereby	Indian Patent Application No.: 201631039602 Filed on: 21.11.2016	Granted Patent No. 434197. Date of Grant 08.06.2023
N.C.Talukdar; R. Devi, D. Chowdhury, R.Kandimalla, S. Kalita, M. Das, H. Kalita, Ankita Hazarika & A. Konwar	Method of preparing a herbal nutraceutical candy	Indian Patent Application No.: 201831024616 Filed on: 02.07.2018	Granted Patent No. 429779. Date of Grant 24.04.2023
J.C. Borah, U. Bora (TU), A.K. Mukherjee, S. Gurumayum, D. Konwar, P. Sarma	Sodium Glucose Transporter 2 (SGLT2) Inhibitors and Process of Preparation	Indian Patent Application No.: 202331029891 Filed on: 25.04.2023	

J.C. Borah, A.K. Mukherjee, S. A. Ahmed, P. Sarma	Method of preparation of enriched fraction from Tribulus terrestris for the treatment of diabetic nephropathy and related complications through Sodium Glucose Co - Transporter 2 (SGLT2) Inhibition	Indian Patent Application No.: 202331028160 Filed on: 18.04.2023	---
J.C. Borah, A.K. Mukherjee, P. Sarma, S. A. Ahmed, D.i Basumatary	Method of preparation of enriched fraction from Boerhavia Diffusa for the treatment of diabetic nephropathy and related complications through Sodium Glucose Co - Transporter 2 (SGLT2) Inhibition	Indian Patent Application No.: 202331084709 Filed on: 12.12.2023	---
J.C. Borah, N. G. Singh, A.K. Mukherjee, S. A. Ahmed, A. Saikia	Steroidal Sodium Glucose Transporter 2 (SGLT2) Inhibitors and synthesis thereof	Indian Patent Application No.: 202431009934 Filed on: 13.02.2024	

Book Chapters

Authors Name	Chapter Title	Book Title	Publisher	Year/ Month of Publication
R. Patowary, A. Devi, A. K. Mukherjee	Potential application of biochar for efficient restoration of crude oil-contaminated sites.	Land remediation and management: bioengineering strategies.	Springer, Singapore	2023
A. Bala, M. G. Matsabisa, P. K. Haldar, S. Biswas, A. K. Mukherjee	Superoxide (o ₂ ⁻): A biological prodigy for developing and curing disease.	The role of reactive oxygen species in health and disease.	Nova Science Publishers	November2 023
S.A.Ahmed, A.K.Borah, J.C. Borah	Inhibition of the serine exopeptidase DPP-IV as a means of mitigation of diabetic nephropathy	Serine Proteases Role in Human Health and Diseases https://doi.org/10.1515/978311325040	De Gruyter	October, 2023

P. Sarma, J.C.Borah	The Phytochemical, Pharmacological and Ethnobotanical aspect of <i>Boerhavia diffusa</i> Linn	Recent Progress in Medicinal Plants (Volume 2) ISBN: 978-81-1997-57-2	IBSD, Mizoram, (Sunmarg Publishers and Distributors)	February, 2024
Das, J.M., Bala A., Upadhyay J., Borah R.	Role of nanotechnology in crop management” In Nanotechnology for Abiotic Stress Tolerance and Management in Crop Plants	Nanotechnology for Abiotic Stress Tolerance and Management in Crop Plants	Elsevier	March 2024
Bala A., Matsabisa MG, Haldar PK, Biswas S And Mukherje A.K.	Superoxide (O ₂ ⁻): A Biological Prodigy for Developing and Curing Disease	The Role of Reactive Oxygen Species in Health and Disease	Nova Science Publishers	February 2024

Popular article published in Newspaper/Magazine

Authors Name	Article Title	Newspaper/Magazine name	Volume & Issue no./ page no.	Month/Year of publication
A. K. Mukherjee, S. Giri	Call for region-specific anti-venoms.	The Times of India		June 10, 2023
A. K. Mukherjee	Novel solution to treat scorpion sting.	The Times of India		Sep 13, 2023
A. K. Mukherjee, M. R. Khan	Study throws new light on spread of covid delta variant.	Assam tribune		Sep 10, 2023
M. R. Khan and A. K. Mukherjee	Shattering boundaries: IASST's empowerment campaign for northeast India's tribal women	Dream 2047	26(10)/16-19	January 2024
S. Gurumayum, J.C. Borah	Markers isolated from medicinal plant found in NE with anti-diabetic properties can help develop remedial	DST Newsletter	--	October 2023

	properties can help develop remedial medicines			
D. Swargiary	<i>Phyllanthus niruri</i> -a magical herb	Dainik Janambhumi	--	February 2024

Contributory

Author(s)	Title	Conference Name	Oral/poster	Date & Venue
H. Kakati, S. Giri, A. Patra, S. J. Taye, D. Agarwalla, H. Baruah, G. Choudhary, N. Boro, B. Kalita, A. K. Mukherjee	A retrospective study conducted in a model secondary hospital in Assam, Northeast India, examined the clinical-epidemiological profile and outcomes of snakebite victims.	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	Poster	February 9-10, 2024/ IASST, Guwahati
P. Baruah, A. Patra, A. K. Mukherjee	An overview of poisonous mushrooms in Assam and a roadmap for preventing and treating mushroom poisoning.	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	Poster	February 9-10, 2024/ IASST, Guwahati
R. Kumar, B. Rajbongshi, U. Puzari, A. K. Mukherjee	Phytopharmaceutical for the treatment of snakebite: Limitations in commercialization.	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	Poster	February 9-10, 2024/ IASST, Guwahati
S. Nath, A. Roy, A. K. Mukherjee	Future strategies for the advancement of ethnomedicine for the treatment of scorpion stings: A prospective analysis.	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and	Poster	February 9-10, 2024/IASST, Guwahati

		International Perspective (SnakeSymp-2024)”		
U. Puzari, A. K. Mukherjee	Snake venom diagnosis: Insight on the current scenario.	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	Poster	February 9-10, 2024/ IASST, Guwahati
D. Madhubala, R. Mahato, Ashis K. Mukherjee	Snake venom-inspired novel peptides protect <i>Caenorhabditis elegans</i> against paraquat-induced Parkinson's pathology	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	Oral	February 9-10, 2024/ IASST, Guwahati
R. Das and D. Thakur	Actinobacteria <i>Streptomyces</i> sp. ATE-26 isolated from tea rhizosphere soil of Assam, India act as biocontrol agents against tea pest and fungal phytopathogens and also degrade chlorpyrifos.	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	Oral	December 22-23, 2023/AAU, Jorhat, Assam
P. Bharadwaj and D. Thakur	Bioprospecting endophytic <i>Actinomyces</i> from Tea plants (<i>Camellia</i> spp.) for plant growth promotion, antagonistic potential and bioformulation for sustainable Tea productivity.	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	Oral	December 22-23, 2023/AAU, Jorhat, Assam
P. Bharadwaj, A. N. Konwar, S. Basak and D. Thakur	Endophytic <i>Actinomyces</i> based bioformulation for sustainable tea productivity.	National Science Day 2024	Poster	February 28, 2024, IASST, Guwahati, Assam

Das J.M., Upadhyay A.M., Kumkar PS.,Haldar P.K., Bala A.	Comparative Evaluation of Cytotoxicity of Monoamine Oxidase Inhibitor (MAO-I) on Different Cancer Cell Lines: Exploring the Possible Cell Death Mechanism	Crosstalk between Animal Research & Alternatives (NSARA-2023) organized by CSIR- NEIST Jorhat	Received- Best Poster Presentati on Award	September 07- 09 , 2023 / NEIST (CSIR) Jorhat
Devroy P., Bala A.	A Target-Centric Drug Discovery approach for the plant Stevia rebaudiana (Bertoni): Target Search by Network Pharmacology ameliorating Diabetic complications and its Validation using in vitro and in vivo Assays	“Role of Medicinal Plants to Ameliorate Diabetes and Related Disorders” organized by SNPS, Jadavpur University, Kolkata, India	Received- Best Oral Presentati on Award	March 08- 09, 2024 / Jadavpur University

Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
A. K. Mukherjee	International Conference on Challenges and Prospects of Bioresource Conservation in Eastern Himalaya - with special reference to UN- Sustainable Development Goals, Department of Zoology.	May 3-4, 2023,Gauhati University, Guwahati
A. K. Mukherjee	National Seminar On Role of Medicinal Plants to Combat Metabolic Disorders and Associated Pathological Complications.	June 30- July 1, 2023/ Jadavpur University, Kolkata
A. K. Mukherjee	10th Convention of Society for Ethnopharmacology, India cum National Seminar on “ Ethnopharmacology for Bio-economy: The New Paradigm ” (EBNP-2023).	November 28- 30, 2023/CSIR-North East Institute of Science and Technology, Jorhat, Assam
A. K. Mukherjee	CME on Snakebite Problem and Hospital Management of Snakebite.	February 8, 2024/ IASST, Guwahati, Assam
A. K. Mukherjee	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	February 9-10 2024/ IASST, Guwahati, Assam.

D. Basumatary	Workshop on National Symposium on Crosstalk between Animal Research & Alternatives 07-09 September, 2023 Organized by CSIR- NEIST, Assam, India.	September 07-09, 2023/CSIR-NEIST Jorhat Assam
D. Swargiary	Workshop on National Symposium on Crosstalk between Animal Research & Alternatives 07-09 September, 2023 Organized by CSIR- NEIST Jorhat, Assam, India.	September 07-09, 2023/CSIR-NEIST Jorhat Assam
S.A. Ahmed	Workshop on National Symposium on Crosstalk between Animal Research & Alternatives 07-09 September, 2023 Organized by CSIR- NEIST Jorhat, Assam, India.	September 07-09, 2023/CSIR-NEIST Jorhat Assam
S. Gurumayum	Workshop on National Symposium on Crosstalk between Animal Research & Alternatives 07-09 September, 2023 Organized by CSIR- NEIST Jorhat, Assam, India.	September 07-09, 2023/CSIR-NEIST Jorhat Assam
S.A. Ahmed, K. Saikia, J.C.Borah	Attended International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP) & International Congress of Society for Ethnopharmacology (SFEC 2024)" (Oral presentation on the topic "Verbascoside from <i>Premna herbacea</i> ameliorates diabetic nephropathy by inhibiting renal sodium glucose transporter 2 and activating AMPK mediated regulation of inflammation and fibrosis")	February 16-18,2024/IIIM Jammu
P.Sarma, J.C. Borah	Attended International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP) & International Congress of Society for Ethnopharmacology (SFEC 2024)"(Oral presentation on the topic "The role of <i>Boerhavia diffusa</i> L. in the treatment of diabetic nephropathy by inhibiting renal sodium glucose transporter 2 and regulating inflammation")	February 16-18,2024/IIIM Jammu

D. Basumatary, J.C. Borah	Attended International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP) & International Congress of Society for Ethnopharmacology (SFEC 2024)"(Oral presentation on the topic "Role of <i>Garcinia morella</i> (Gaertn.) Desr. dried fruits in preventing leaky gut associated NAFLD in C57BL/6 mice")	February 16-18,2024/IIIM Jammu
A. Saikia, J.C. Borah	Attended International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP) & International Congress of Society for Ethnopharmacology (SFEC 2024)"(Oral Presentation on the topic "VITEX NEGUNDO L. and Agnuside isolated thereof, alleviates palmitic acid-induced hepatic steatosis via AMPK/SREBP-1c/HMGCR/PPAR- α signalling pathways in hepatocytes")	February 16-18,2024/IIIM Jammu
Dr. M. J. Bhattacharjee	Global Bio- India (GBI) programme	December 4- 6, 2023/ New Delhi
Mr. A. Bhattacharya	Global Bio- India (GBI) programme	December 4- 6, 2023/ New Delhi
Prof. M. R. Khan	India International Science Festival 2023	January 17-20, 2024/Faridabad
Dr. M. J. Bhattacharjee	India International Science Festival 2023	January 17-20, 2024/Faridabad
Mr. S. Das	India International Science Festival 2023	January 17-20, 2024/Faridabad
P. Bharadwaj	Webinar on "Ralstonia solanaearum: A soil born hidden enemy of the plants"	August 28, 2023/ (Online)
R. Das	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	December 22-23, 2023/ AAU, Jorhat, Assam
P. Bharadwaj	National Conference on Women Scientists in Plant Health Management for Sustainable Development goals	December 22-23, 2023/ AAU, Jorhat, Assam

P. Bharadwaj	India International Science Festival 2023	January 17-20, 2024/ DBT THSTI- RCB campus, Faridabad, Haryana
R. Das	Hands on workshop on “Molecular approaches to assess toxicity and stress in biological samples”	February 20-26, 2024/ Gauhati University, Assam
Dr. Asis Bala	8th World Cancer Congress	March 18- 20 , 2024/ JNU Convention Centre New Delhi
Mr. Jitu Mani Das	Crosstalk between Animal Research & Alternatives (NSARA-2023) organized by CSIR- NEIST Jorhat	September 07-09, 2023 / NEIST (CSIR) Jorhat
Ms. Piyali Devroy	“Role of Medicinal Plants to Ameliorate Diabetes and Related Disorders” organized by SNPS, Jadavpur University, Kolkata,	March 08- 09 , 2024 / Jadavpur University
Dr. Asis Bala	IISF-2023	January 17-20, 2024 DBT THSTI - RCB Campus, Faridabad
Dr. Asis Bala	SnakeSymp-2024-From Venom Pharmacology to Drug Discovery: National and International Perspective	February 09-10, 2024/ IASST Guwahati

Invited talks

Faculty	Title	Programme Name	Date & Venue
A. K. Mukherjee	Plant-derived natural products to combat cardiovascular diseases: Key concerns and solutions for their sustainable use and commercialization	National Seminar On Role of Medicinal Plants to Combat Metabolic Disorders and Associated Pathological Complications	June 30- July 1, 2023/ Jadavpur University, Kolkata
A. K. Mukherjee	Ethnic food as a functional food for the global market'- An approach for bio-economy of NE India.	10th Convention of Society for Ethnopharmacology, India cum National Seminar on “Ethnopharmacology for Bio-economy: The New Paradigm ” (EBNP-2023)	November 28- 30, 2023/CSIR-North East Institute of Science and Technology, Jorhat, Assam

A. K. Mukherjee	Biochemistry of Indian snake venom and pathophysiology of Indian snake envenomation.	CME on Snakebite Problem and Hospital Management of Snakebite	February 8, 2024/ IASST, Guwahati
A. K. Mukherjee	Prospects and existing state of repurposing small molecule inhibitors for treating snake envenomation.	2-Day Symposium on “From Venom Pharmacology to Drug Discovery: National and International Perspective (SnakeSymp-2024)”	February 9-10 2024/ IASST, Guwahati, Assam.
A. K. Mukherjee	The role of IASST in promoting the ethnic food and beverages of NE India to the global market.	Symposium on INDIA (NECTAR) - JAPAN(AIST) joint symposium AIST-INDIA DAILAB PIKNIKH SERIES 55 (platform for innovating knowledge to international know-how)	February 27 - 28, 2024/NECTAR, Shillong
A. K. Mukherjee, M. R. Khan	IASST's initiatives to promote rural livelihood in Northeast India	DST's 1 st National Scientific and Technical Rajbasha Seminar 2024 on “Role of DST Autonomous Institutes in Self-Reliant India”	March 21-22,2024/ International Advance Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad

Lectures delivered at other institutes

Faculty	Topic	Date & Venue
A. K. Mukherjee	Snake venom-inspired antithrombotic drug development against cardiovascular disease	March 6, 2023/ Department of Molecular Biology and Biotechnology, Tezpur University, Assam
A. K. Mukherjee	Role of Medicinal plants to combat metabolic disorders and associated pathological complications	June 30-July 01, 2023/Jadavpur University, Kolkata, India.
A. K. Mukherjee	Drug development from natural resources	August 30,2023 Department of Chemistry and Biochemistry, University of Porto, Portugal

Contribution to World Database

Author (s)	Title	Database	
M.R. Khan	Whole genome sequence of <i>Lactiplantibacillus plantarum</i> MKTJ24	NCBI	PRJNA1036387
M.R. Khan	RNA sequence dataset of <i>Lactobacillus brevis</i> MKAK9	NCBI	PRJNA945374
M.R. Khan	Whole genome sequence of <i>Lactiplantibacillus plantarum</i> LPJBC5	NCBI	PRJNA1085560

Author (s)	Title	Database	<u>Accession No.</u>
R. Das, K. Saikia and D. Thakur	Whole genome sequencing and assembly of <i>Streptomyces</i> sp. ATE-26	NCBI	JARYZK000000000 BioProject: PRJNA850848
A. N. Konwar and D. Thakur	Whole genome sequencing and assembly of <i>Streptomyces</i> sp. NP73	NCBI	JASITI000000000 Bioproject: PRJNA957080
P. Bharadwaj and D. Thakur	16S ribosomal RNA gene, partial sequence	NCBI	OR054202- OR054205, OR145798- OR145811, OR880081- OR880092, PP263593- PP263607
A. N. Konwar and D. Thakur	16S ribosomal RNA gene, partial sequence	NCBI	PP474211-PP474254
C. J Devi and D. Thakur	16S ribosomal RNA gene, partial sequence	NCBI	OR461530- OR461535, OR166868- OR166870, OR145850- OR145854, OR059363- OR059368, OQ852758- OQ848238
C. J Devi and D. Thakur	Polyketide synthase gene (PKS-II)	NCBI	OR257081 OR257082
J. Saikia and D. Thakur	Polyketide synthase gene (PKS-II)	NCBI	OR594389

Presentation in Conferences/seminar

Invited talks

Faculty	Title	Programme Name	Date & Venue
Dr. Asis Bala	Comparative Evaluation of Cytotoxicity of Monoamine Oxidase Inhibitor (MAO-I) on Different Human Cancer Cell Lines: Exploring the Possible Cell Death Mechanism	8th World Cancer Congress	March 18- 20, 2024/ JNU Convention Centre New Delhi
Dr. Asis Bala	Basic concepts of animal handling and ethics in experimental Pharmacology & Toxicology	Molecular Approaches to Assess Toxicity and Stress in biological samples- DST-PURSE program	February 22, 2024/ Guwahati University
Dr. Asis Bala	Ethics in experimental Pharmacology & Toxicology	AICTE sponsored STTP	August 07-12, 2023/ Girijananda Chowdhury University Guwahati

Other activities

Visits to national/international institutes/laboratories

Faculty/Research scholar	National/international institutes/laboratories	Date
Prof. Ashis K. Mukherjee	University of Porto, Portugal	August 27- 31, 2023
Dr. Asis Bala	Animal House, National Institute of Pharmaceutical Education and Research, (NIPER) Guwahati	August 10, 2023

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Mr. Dhandapani R	VSBE	Dissertation	Completed	08-02-2023 to 23-05-2023
Mr. Mohammed Asif J	VSBE	Intern	Completed	05-01-2024 to 31-01-2024

Mr. Vignesh. N	V.S.B Engineering College	Intern	Completed	03/07/2023-10/08/2023
Ms. Rashi Raj	Department of Life Sciences, NIT Rourkela, Odisha	Intern	Completed	23/06/2023-21/07/2023
Ms. Sritama Banerjee	Techno India University, Kolkata	UG Dissertation	Completed	05/07/2023-30/11/2023
Mr. Mohit Pandey	Department of Pharmacology, TMU, Uttar Pradesh	Intern	Completed	16/01/2024 to 14/03/2024
Dr. Dhanwantari Behera	Govt Ayurvedic College Hospital, Guwahati	PG Dissertation	Ongoing	27-12-2023 to Till date
Ms. Sreeya Nayak	Centre for Biotechnology (SPS), SOA University	PG Dissertation	Ongoing	08-01-2024 to Till date
Ms Kasturi Saha	Hansraj College	UG	Submitted	08/06/2023 to 07/08/2023
Ms Panchi Rani Narah	NIPER, Guwahati	PG	Ongoing	03/07/2023 to till date
Mr. V L Vibash Kalyaan	SRMIST, Chennai	UG	Submitted	01/01/2024 to 01/03/2024
Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
S. Gopinath	SRM Institute of Science and Technology (Ramapuram Campus), Chennai	UG Intern	Completed	2 months
Mr. Surya S	Anna University	Intern	Completed	2 Months
Mr. Abhishek M. Upadhaya	Parul University	Intern	Completed	2 Months
Mr. Suraj Kumar Chatterjee	Techno India University	Project	Completed	6 Months
Mr. Aravind Sai Bharathy K	Anna University	Intern	Completed	2 Months
Ms. Pratiksha S. Kumkar	NIPER-Guwahati	Project	Ongoing	12 Months

Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
Kaushalendra Kumar Mishra	Teerthaker Mahaveer College of Pharmacy TMU Moradabad U.P	Intern	Completed	2 Months

Awards/Recognitions/Achievements

Shabiha Nudrat Hazarika	Biotechnology Ignition Grant-North East Region (BIG -NER) Special Call 2.0, a flagship programme of the DBT- Biotechnology Industry Research Assistance Council (BIRAC), Govt. of India in the year 2022-23.
Pranami Bharadwaj	1 st Position in Oral Presentation at National Conference on Women Scientists in Plant Health Management for Sustainable Development goals organized by Assam Agricultural University, Jorhat and Indian Phytopathological Society, New Delhi during 22 nd to 23 rd December, 2023 at AAU, Jorhat.
Pranami Bharadwaj	“Best Presentation Award” for Research Scholars Presentation 2023-24 in Life Sciences and secured 1 st prize on National Science Day (February 28, 2024) at IASST, Guwahati.

Name of student	Name of supervisor	Title of the thesis	Award giving university	Date of Ph. D Awarded
Ms. Bhabana Das	Dr. A K Mukherjee	Characterization of <i>Mesobuthus tamulus</i> venom (MTV), commercial anti-scorpion-antivenom, and assessment of MTV neutralization potency of a formulated drug	T U	17-11-2023

Placement of IASST Scholars at Other Institutes:

(List of lab members appointed in other national/ international laboratories/organizations)

Name of the member	Name of the supervisor	Position and current laboratory
Dr. Aparup Patra	Prof. A. K. Mukherjee	Assistant Professor, Amrita Research Centre, Amrita Vishwa Vidyapeetham

INTERDISCIPLINARY RESEARCH



INTERDISCIPLINARY RESEARCH

Interdisciplinary Research

Coordinator: Dr. Kamatchi S.

A.1 Cold Atmospheric Plasma for Fibrinogen Self-assembly:

Cold atmospheric plasma (CAP) has gained significance in recent years, and different prospects for it have been studied widely owing to its effectiveness and eco-friendly nature. CAP has been used extensively in wound healing. However, a detailed understanding of the interaction of the CAP with different protein macromolecules present in our body is essential. In this study, we emphasize how CAP affects the protein fibrinogen. Fibrinogen is a major protein involved in blood clotting and the major protein in the blood. Fibrinogen undergoes a self-assembly process with CAP, as evidenced by

various biophysical studies. DNPH assay supports the fluorescence studies as more protein carbonyls are formed in the case of argon and oxygen gas plasma. SEM analysis proves that the protein Fibrinogen undergoes a self-assembly process to create organized assemblies in the presence of a plasma jet. This understanding can be instrumental in advancing the application of CAP in wound healing. By elucidating how these reactive species interact with fibrinogen and influence its self-assembly, researchers can potentially optimize CAP treatment protocols to enhance wound healing outcomes. This study holds promise for developing more effective therapeutic strategies leveraging CAP technology.

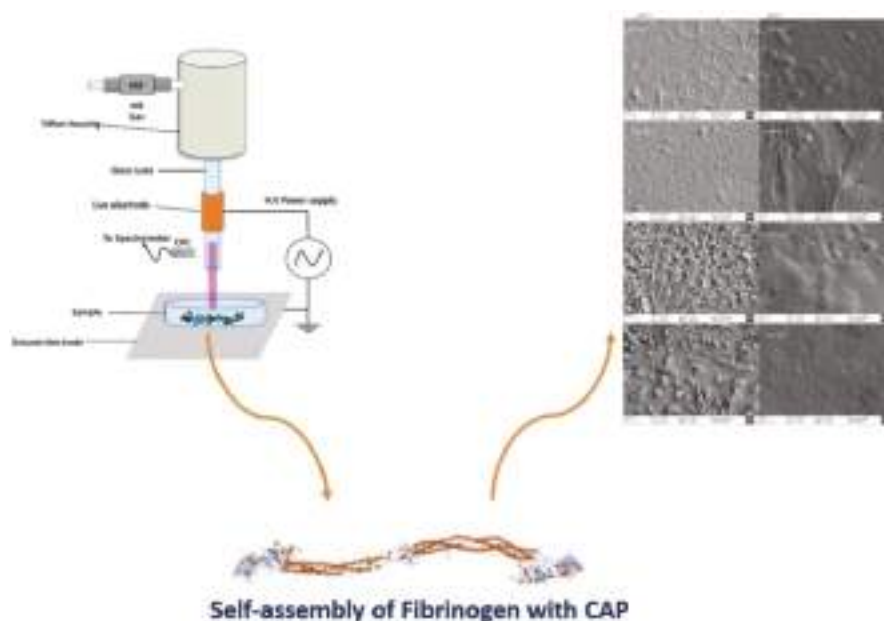


Fig. 1. Self-assembly of protein Fibrinogen with CAP.

A.2 Ionic liquids for protein sericin extraction from mulberry and NE specific Non-mulberry silk fibers:

Protein extraction from silk is a unique area of research. The foremost need is the efficient extraction of the silk proteins, namely fibroin and sericin from the silk fibres, which are conventionally done using chemicals. In this work, we show that Ionic liquids (ILs) can be employed as a green and alternative method of silk degumming. Six different ILs with varying tail lengths were studied for their degumming efficiencies. The interaction between silk proteins and IL ions involves a complex ionic disruption of hydrogen bonds, non-polar interactions, and electrostatic effects. We have found that 1-Butyl-3-methylimidazolium

chloride (BMIM.Cl), 1-ethyl-3-methylimidazolium tetrafluoroborate (EMIM.BF₄), and Tetraethylammonium bromide (TEAB) bring in higher weight loss % in silk fibers compared to other ILs, indicating that it can be used in better sericin removal without significant damage to the silk protein. TEAB emerged as a potential candidate for sericin extraction due to its promotion of protein destabilization. Additionally, no drastic changes in the extracted silk protein sericin structure were observed, as evident from the FTIR spectra and SEM images. This work is the first use of ILs to extract non-mulberry silk sericin and can prove to be a potential green solvent for sericin extraction.

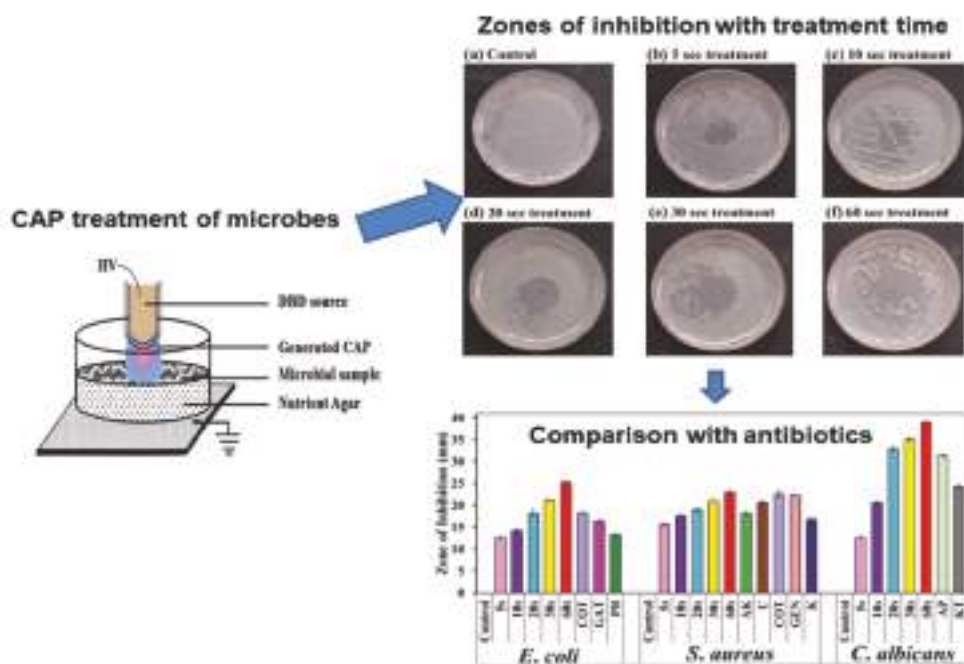


Fig. 2. CAP treatment of the microbes (*E. coli* (ATCC BAA-2469), *S. aureus* (MTCC 96), *C. albicans* (MTCC 227)) showing inhibition zones (ZOI) for various treatment times and a Comparison of the ZOI diameter of the CAP-treated microbes with selected antibiotics. COT- Co-Trimoxazole, GAT-Gatifloxacin, PB- Polymyxin B, AK- Amikacin, C-Chloramphenicol, COT- Co-Trimoxazole, GEN- Gentamicin, K- Kanamycin, AP- Amphotericin-B, KT- Ketoconazole.

Coordinator: Dr. S Biswas

Co-investigator: Dr. D. Thakur

B.1 Inactivation of *Candida albicans*, *Staphylococcus aureus*, and multi-drug resistant *Escherichia coli* with dielectric barrier discharged cold atmospheric plasma: A comparative study with antibiotics

Cold atmospheric plasma (CAP) has emerged as a promising technology in neutralizing microbes, including multidrug-resistant strains. An indigenously developed dielectric barrier discharged setup consisting of a high-voltage electrode covered with quartz glass and a stainless-steel mesh as the ground electrode generated CAP to treat three pathogenic samples. The study aims to explore the potential inactivation of three microorganisms, namely multi-drug resistant *Escherichia coli* (ATCC BAA-2469), *Staphylococcus aureus* (MTCC

96), and *Candida albicans* (MTCC 227) by CAP and compare the efficacy with tested antibiotics. Notably, just 20s CAP treatment has surpassed the zone of inhibition (ZOI) of 10-50mcg tested antibiotics. The study shows its novelty in uniquely delaying the growth of microorganisms after CAP treatment. The inactivation of CAP-treated microorganisms was further confirmed by scanning electron microscopy analysis. The inactivation mechanism could be due to exogenous reactive oxygen and nitrogen species (RONS) generated during CAP treatment, which was confirmed by optical emission spectroscopy (OES) analysis. The study demonstrates the superior efficacy of CAP treatment against tested antibiotics in ZOI (see Fig. 2); which could help reduce reliance on antibiotics in the era of antibiotic resistance.

RESEARCH OUTPUTS

Extramural Projects

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator; Co-Investigator:	Goal
Cold atmospheric pressure plasma for the treatment of chronic wounds - A Geroscience-based approach	Funding Agency: ICMR-ITR Grant Total fund: Rs. 83 lakhs Duration: 3 Years PI: Dr. Kamatchi S Co-PI: Dr. Devashish Choudhury, Dr. H. Bailung, Dr. A.K. Mukherjee	To understand the role of CAP in proteins self-assembly for further applications in the Geroscience.

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./ page no.	Month/Year of publication
M. Kalita, C. Sarma, M. Kalita, V. Sarmah, K. Sankaranarayana n	Efficient extraction of sericin protein from mulberry and non-mulberry silk fibers: utilizing aqueous ionic liquid solutions as green solvents	Chem. Select	9 (e202304064), 2365-6549	Feb/ 2024
Reema, D. Basumatary, H. Bailung, K. Sankaranarayana n	Comparative analysis of direct cold atmospheric plasma treatment vs. Plasma activated water for the deactivation of omicron variant of sars-cov-2	Plasma Chemistry and Plasma Processing	44(2024), 1019–1030,	Jan/ 2024

K. Kalita, S. J Phukan, S. Garai, Kamatchi Sankaranarayana n	Polyoxometalates mediated amyloid fibrillation dynamics and restoration of enzyme activity of hen egg white lysozyme treated under cold atmospheric pressure plasma	ACS Omega	9(3423)/ 2470-1343	Jan/2024
A. J Bharati, R.R Khanikar, H. Bailung, K. Sankaranarayana n	Investigating the effect of atmospheric plasma on protein fibrinogen: spectroscopic and biophysical analysis	Plasma Processes and Polymers	21(3)/ 2300127	Sept/ 2023
D. Basumatary, H. Bailung, S.B. Jorvekar, R. M. Borkar and K. Sankaranarayana n	Investigating the impact of inbuilt cold atmospheric pressure plasma on molecular assemblies of tryptophan enantiomers: in vitro fabrication of self-assembled supramolecular structures	RSC Advances	13(26640)/ 2046-2069	June/ 2023

Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
Reema	International Conference on Futurist Material for Sustainable Development Goals	January 9-10, 2024/ Chandigarh University, Chandigarh
D. Basumatary, D. Deb	Society of Polymer Science, India-MACRO-2023, 17 th International Conference on Polymer Science and Technology	December 10-13, 2023/ IIT Guwahati
P. Bhatt, A. J. Bharati	PLASMA 2023, National Symposium on Plasma Science & Technology	December 4-8, 2023/ UPES Dehradun

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
M. Patra	Sikhsha O' Anusandhan deemed to be University	PG project	Ongoing	Jan 2024 – May 2024
N.Kakati	M.Tech Medical Devices, NIPER Guwahati	PG Project	Ongoing	July 2023 – May 2024
D.Phawa	Pub Kamrup College, Baihata Chariali	Intern	Completed	June 2023- August 2023



FACILITIES AT IASST

FACILITIES AT IASST

BIONEST IASST- THE BIO-INCUBATION FACILITY AT IASST

BioNEST-IASST is the incubation center of IASST, which is supported by the scheme BioNEST (Bio Incubators Nurturing Entrepreneurship for Scaling Technologies) BIRAC, Govt. of India. It caters to providing a one-stop solution to entrepreneurs by providing business and technical consultancy services, networking support, advisory and legal mentorship, IPR consultancy, and facilitation of funds /grants for incubates. BioNEST-IASST provides facilities like lab space, office space, meeting/conference room, bootstrapping area, sealing & packaging facility, dedicated cell culture, and microbiology & fermentation facility for entrepreneurs to develop their products for commercialization. BioNEST-IASST has supported 50+ incubates, of which 25% are women-led ventures.

Activities of BioNEST IASST in the year 2023-24

1. Bio-NEST IASST, in association with the Institute of Advanced Study in Science and Technology (IASST), organized an interactive Session on the topic “Intellectual Property Rights for Safeguarding R&D-based Innovations and Entrepreneurship Development” on 26th April 2023.

2. **BioNEST-IASST** hosted an Entrepreneurship Exposure Visit on May 9th, 2023, for the 2nd and 4th-semester students of the Department of Herbal Science & Technology, ADP College, Nagaon, Assam.

3. BioNEST-IASST organized an invited talk on the occasion of World MSME Day on 27th June 2023

4. On July 20, 2023, Shri Vishvajit Sahai, Additional Secretary & Financial Adviser, Department of Science & Technology, visited BioNEST-IASST



5. BioNEST-IASST hosted a one-day workshop on sustainable livelihood with mushroom cultivation on August 8th, 2023.

6. BioNEST-IASST is glad to host the students and faculty members of the Department of Biosciences, Assam Don Bosco University, Sonapur, Assam, for an Entrepreneurship Exposure visit on 24th August 2023.



7. Bio-NEST IASST recently hosted an industry exposure visit as part of the Skill Development Training Program organized by the Indian Institute of Entrepreneurship - IIE on 15th Sep 2023.

8. BioNEST-IASST hosted the students and

faculty members from the Department of Microbiology, Royal Global University, Betkuci, Guwahati, on 21st September 2023.

9. On 27th September 2023, Prof. Shambhu Nath Singh, Vice-Chancellor of Tezpur University, accompanied by Professor Ashis K. Mukherjee, Director of IASST, Prof. Devasish Chowdhury, from Physical Science Division, IASST, visited the Bio-NEST IASST facility.

10. BioNEST-IASST hosted an exposure visit for the B.Pharm Final year students of the School of Pharmaceutical Sciences, USTM, Ri-Bhoi, Meghalaya on the 10th & 11th of October 2023.

11. Bio-NEST-IASST presented a special session on Rural Entrepreneurship, Government schemes for promoting rural livelihood, and alternative business ideas to SHGs on 13th October 2023.

12. BioNEST-IASST organized an exposure visit for the MSc students of the Program of Food Nutrition and Dietetics at Assam Down Town University at IASST campus on the 6th of December 2023.

13. On 19th Dec, distinguished members of the Scientific Advisory Council (SAC) of IASST, Prof. Amalendu Chandra and Prof. B. N. Goswami, along with IASST faculty members, visited the BioNEST-IASST facility.

14. Bionest-IASST organized a webinar on Design Thinking in Bio-entrepreneurship with Dr. Inv Shivakiran M.S., CEO of Atal Incubation Centre-Sri Krishnadevaraya University, on 25th January 2024.

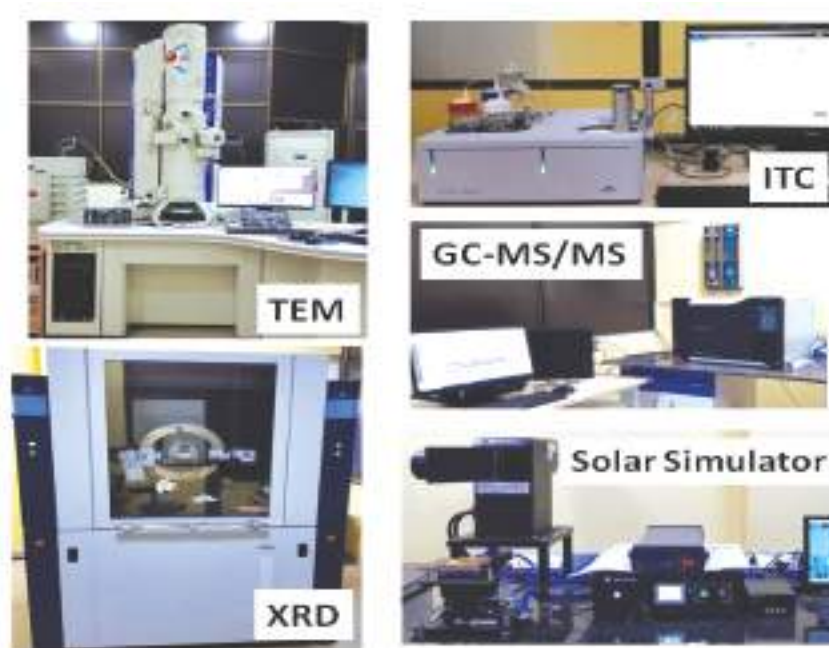
15. International Women's Day was celebrated at IASST on 8th March in association with ICC, IASST, and BioNEST-IASST.

16. BioNEST-IASST participated in the North East Startup Conclave 2024 held at Guwahati on 27th and 28th March 2024. The event was organized by NECTAR and supported by technical partners- IASST, IHFC-IITD, INSA, NIF, VIBHA, and UBA. The event featured a Panel discussion on “The startup ecosystem of North East region of India.” The incubatees of BioNEST-IASST showcased their innovative products at the Mega Expo.

SOPHISTICATED ANALYTICAL INSTRUMENT CENTRE (SAIC)

The sophisticated Analytical Instrument Centre (SAIC) of IASST provides different equipment support to meet the growing demand of researchers in IASST and the Northeastern region of India. At present, SAIC has 40 numbers of equipment, including XRD, FE-SEM, TEM, AFM, NMR, Confocal Microscope, PL, TRPL, GC-MS/ MS, LC-MS/MS, HPLC, HPTLC, UPLC, AAS, CHNS/O Analyzer, FACS, Raman Spectrometer, BET surface area analyzer, DSC, TGA, FT-IR, Zeta Sizer, Contact Angle

Analyzer, UV-Vis Spectrophotometer, CD Spectrometer, Isothermal Titration Calorimetry, Multi-mode Reader, Solar Simulator, etc. In addition, new equipments, e.g., Ellipsometry, FE-SEM, and High-Performance Computational Facility, will be available soon. Six thousand six hundred forty-five internal and one thousand two hundred seventy-two external samples were analyzed at SAIC from 2023-2024. Sample booking is done through the SAIC online portal.



Glimpses of a few SAIC instruments.

ANIMAL HOUSE FACILITY

The Animal House provides a cutting-edge laboratory for pre-clinical drug discovery, focusing on *in vivo* evaluation in various disease models. This state-of-the-art facility is registered with the Committee for Control and Supervision of Experiments on Animals (CCSEA) under the Ministry of Fisheries, Animal Husbandry, and Dairying, Government of India. It adheres to strict ethical standards to ensure the safety and well-being of the animals involved in scientific research.



IASST has recently added cutting-edge features in the new facility, which include Dual-corridor systems for clean and dirty areas, Individually Ventilated Cages (IVC) to maintain the hygiene and health of the animals, Bed Disposal System (BDS) for safe and easy disposal of used bedding material, and Animal

Changing Station (ACS) for the safe and effortless transfer of animals. The facility has received recognition for its rigorous adherence to the CCSEA norms, and its users have highly appreciated its innovative contributions to the Northeast region. In addition, the institute has developed a cutting-edge Zebrafish Housing

system that has further enhanced the experimental animal house facility. This innovative system has added a new level of sophistication to the facility, providing a safe and secure environment for the zebrafish, which is crucial for conducting accurate and reliable experiments. The new system has been designed with the latest technology and equipment to ensure that the zebrafish are well-cared for and that their living conditions are optimal. Overall, this new system represents a significant advancement in animal research.



MEDICINAL PLANT GARDEN

IASST is setting up a medicinal plant garden to create awareness of the conservation and traditional uses of herbs and medicinal plants for visitors. It is also a place where students, farmers, and others can learn how to identify and conserve these important plants. Fifty-three different medicinal plant species have been planted based on Indian Systems of Medicine (ISM), many of which are highly abundant in the NER region of India. Many medicinal plants are on the way to extinction, and our garden will serve as a conservation of Nature Red List of Threatened Species (IUCN). Healing with medicinal plants is an old treatment method as old as humanity. The connection between human and their search for drugs in nature dates from the far past, of which there is enormous evidence from different sources. Awareness of medicinal plants usage is a result of the many years of struggles against diseases, and man learned to pursue drugs in barks, seeds, fruits, and other parts of the plants. Contemporary science has acknowledged and considered the active actions of plant-origin drugs in modern pharmacotherapy, known by ancient civilizations and used throughout the millennia. The knowledge of developing ideas related to medicinal plant usage with awareness will increase the ability to combat the challenges encountered by healthcare professionals.



ADVANCE LEVEL INSTITUTIONAL BIOTECH HUB

The Advanced Level Institutional Biotech Hub (AL-IBTH), funded by DBT, GOI is actively committed to educating students, scientists, and faculty in Northeast India to become proficient in the advanced techniques of microbiology, molecular biology, and bioinformatics. AL-IBTH is also committed to training unemployed youth in producing and marketing fermented foods to generate income and secure their livelihoods. Three training programs were carried out between 2023 and 2024. (1) The first 5-day training program was “Production of fermented food and beverages.” It was conducted from 10th – 14th July 2023 with 29 participants comprising BSc and MSc students, PhD scholars, and faculties from various institutions. (2) The second 5-day training program was an outreach program on “Safe processing of fermented fish 'Xindol' and its marketing” conducted from 9th – 13th October 2023, with 25 unemployed rural tribal women of the 'Upasona ethnic food society,' an SHG formed by IASST in Bakarapara village, Kamrup (Rural). (3) The third training program was a 5-day faculty improvement training program on “Study on microbial dynamics during fermentation of ethnic foods and beverages,” held from 29th January – 2nd February 2024 with 22 faculty participants from various institutions of India, mainly from Northeast India.



Glimpses of the training programs conducted by AL-IBTH during the years 2023 and 2024.

B. R. AMBEDKAR CENTRE FOR COMMUNITY EMPOWERMENT (BRACE)

IASST has a vision 'To emerge as a center of excellence in frontier research areas of Physical and Life Sciences with international visibility and building human resources towards advanced scientific knowledge for societal development' and objectives 'To attract and motivate young talents towards scientific research' and 'To spread awareness for growth of science and technology in the region



Dr. B. R. Ambedkar Centre for Community Empowerment (BRACE).

through societal interventions'. To fulfill the vision and objectives of IASST for its social responsibilities, a dedicated center named Dr. B. R. Ambedkar Centre for Community Empowerment (BRACE) has been created with state-of-the-art facilities for teaching and training purposes. This center will facilitate the expansion of ongoing societal work more significantly to promote science awareness in underprivileged sections, develop technologies for local issues, and enhance rural livelihood through scientific interventions.

Activities of BRACE in the year 2023-24

1. Rural entrepreneurship

IASST plays a pivotal role in the societal development of the tribal population of the region, mainly focusing on women's empowerment. It is evident in its transformative journey, particularly in the adopted tribal villages of Bakarapara, Kallapara, and Satargaon. Initially, mushroom cultivation, sericulture, *Eri* silk rearing, black rice cultivation, duck rearing, tapioca cultivation, and vermicomposting were introduced. Since then, a Self-Help Group (SHG) named 'Upasana Ethnic Food Society' was formed, bringing together 21 rural tribal women to promote their traditional delicacy, *Xindol*, facilitating a sustainable livelihood system for more than 300 beneficiaries. Further, IASST expanded its initiatives to promote *Eri* silk production and its edible pupae, benefiting more than 65 households. In Barnagaon village of Udalguri district, 'Daogalang and Gwjwnsri Soya Societies' were formed to cultivate soybeans and promote soy-based products. This initiative has proven to be a game-changer, benefiting over 300 people in the region, increasing soybean yield, and sparking the emergence of soybean-related businesses. IASST has also formed 'The Sudarshan Fermented Fish Society' at Sonbeel, Karimganj, to promote another traditional fermented fish, *Shidal*. A scientific intervention by IASST reduced the fermentation time of *Shidal*, which allowed them to double the production in a season, thereby benefitting more than 14 households and > 200

beneficiaries. In a strategic move to bridge the gap between production and market access, IASST incubated these societies under the Bionest facility for product development, upscaling, and market linkage.



Upasona ethnic food society at Bakarapara village.



A glimpse of a training program for safe processing of Xindol.



Distribution of society registration certificate, FSSAI & trade licenses.

2. Laboratory experience-based science education

IASST initiated its 'Laboratory experience-based science education' programme to promote scientific temperament and attract rural school students towards science. School students from remote rural villages and science teachers are exposed to the laboratories of IASST, where some basic science experiments are also performed. This program also includes science teachers to update their knowledge of recent developments. A dedicated team for this purpose also visits these schools with customized kits to demonstrate basic science experiments. During 2023-24, 19 such training programmes were conducted, including one for the science teachers of rural colleges. IASST also organises drawing competitions among such students in its campus.



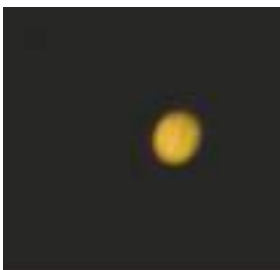
Glimpses of a school student and teacher's training programmes and drawing competition.

Glimpses of the training programs conducted by AL-IBTH during the years 2023 and 2024.

ASTRONOMICAL TELESCOPE AND OBSERVATORY

An astronomical telescope (Celestron CGX-L Equatorial 1400 Schmidt- Cassegrain Optical Telescope) and its dome have been installed on the terrace of the observatory building of the institute. The aperture of the telescope is 14" with a focal ratio $f/11$. The telescope is placed inside the observatory dome of about $\sim 3\text{m}$ in diameter and $\sim 3\text{m}$ in height. The dome head is a motorized control with forward and reverse-switched movement. Along with this main telescope, a small telescope (Celestron Advanced

VX 6" Schmidt-Cassegrain Small Optical Telescope) is also procured to take advantage of its ability to carry it to various places. Several sky observation events through the telescope have been organized for the staff and research scholars of IASST. The planets Jupiter, Saturn, Mars, and Venus have been observed through the telescope. The moon's surface had also been explored with the telescope.



Few snapshots of the Astronomical Telescope, Observatory Building, and sky observation events. From left to right: Astronomical Telescope and Observatory Building, a snapshot of the moon and Jupiter taken through the telescope, a research scholar observing the sky through the telescope, and group photos during a sky observation event.

QUALITY CONTROL AND QUALITY ASSURANCE (QC & QA) FACILITY FOR HERBALS AND PHYTOPHARMACEUTICALS

Quality Control and Quality Assurance (QCQA) laboratory facility, IASST, has been granted National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation as per ISO/IEC 17025:2017 (certificate no. TC-11569) and also State Drug Testing License (AYUSH) under State Drug Control as per 160-A of Drugs and Cosmetics Rule, 1945 vide letter no. AYUSH/LA/20/2022/1386 dated 02.09.2022. Along with this, a few more quality

test parameters as per IP or API of *Emblica officinalis*, *Mucuna pruriens*, *Taxus baccata*, *Asparagus racemosus*, *Boerhaavia diffusa*, *Piper longum* are being added under NABL accreditation. QCQA IASST also houses 25 authenticated herbariums (per national pharmacopeial standards) of high commercial value medicinal plants of NER and raw drug samples stored in the facility museum.

As a part of the capacity building program objective, all the project personnel have been trained on ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories and Measurement of Uncertainty conducted by QCI, Delhi and IIQM, Jaipur (as a certificate program). Local medicinal plant growers/FPOs, herbal product

manufacturers, and traditional healers have been identified and made aware of GMP requirements in the medicinal plant sector and the facility available at IASST, Guwahati. This facility will assist in much-needed demand from all stakeholders of this region for a quality testing laboratory facility for herbals.

KNOWLEDGE RESOURCE CENTRE

The Knowledge Resource Centre (KRC) at IASST is a dynamic nucleus for learning and research endeavours. Since its inception, KRC has been pivotal in furnishing crucial information and academic support to its users, employing state-of-the-art tools to cater to the needs of the scientific community engaged in Research and Development activities within the institute.

Distinguished as a particular library, KRC boasts memberships in prestigious consortia such as the National Knowledge Resource Consortium (NKRC), National Digital Library (NDL), Developing Library Network (DELNET), Indian Association of Special Library and Information Center (IASLIC) and the Current Science Association (CSA). Extending its services beyond its confines, the center collaborates with researchers from various educational and research institutions across North East India.

The repository of KRC encapsulates a comprehensive collection comprising 8,543 books, 2,939 bound periodicals, 119 theses, 184 dissertations, and more than 818 research papers (including journal articles and book chapters).

Additionally, patrons benefit from access to subscribed e-resources, including scholarly e-journals, through Wi-Fi and LAN connections. Moreover, KRC efficiently manages plagiarism checks through iThenticate, aids in writing assistance via Grammarly, and enables scientific graphing and data analysis through Sigma Plot software. Augmenting its digital footprint, the institute houses its own Institutional Repository (IR) or Digital Library, accessible through institute-wide Wi-Fi or LAN facilities, thereby granting access to digital resources produced internally.

In the fiscal year 2023-2024, KRC further enhanced its services, procuring 128 new books based on patron requisitions, circulating 284 books, and facilitating photocopying printing services. Organized into various sections, including Circulation, Property Counter, Technical Processing, Reading Area, Digital Resource, Periodical, Book, Mini Conference Room, Back Volume, and Faculty Reading Room, KRC ensures an optimal environment conducive to reading and scholarly deliberation for its users.





ACADEMIC ACTIVITIES

RESEARCH AND DEVELOPMENT (R&D) CELL

The Research and Development (R&D) cell of IASST was established in March 2021 to facilitate a healthy growth of research activities at IASST. This cell manages the extramural projects funded by external funding agencies and ensures easy dissemination of core research funds through In-house project mode. This cell also helps the principal investigators recruit project personnel and assess ongoing projects.

During the financial year 2023-24, IASST had undertaken 17 (Seventeen) numbers of extramural projects, out of which 05 (Five) are being funded by DBT, Govt of India, 7 (Seven) are being sponsored by SERB and DST, and the rest by other funding agencies.

Apart from these, IASST has undertaken 25 (Twenty-five) in-house research projects during the year, which the institute has funded.

M. Sc. / B. Tech projects/Internship Courses Offered at IASST

Name of Student	College/University	UG/PG Projects/Intern	Status of Project	Duration
Ms. Sonali Dubey	Central University of Punjab, Bathinda,	Internship	Completed	15-02-2023 to 15-05-2023
Mr. Vishal Kumar	H.N.B. Garhwal University, Uttarakhand,	Internship	Completed	01-02-2023 to 31-03-2023
Ms. Rashi Raj	NIT Rourkela, Odisha,	Internship	Completed	23-06-2023 to 21-07-2023
Mr. Eshaan	Indian Institute of Technology, Mandi	Internship	Completed	12-06-2023 to 03-08-2023
Ms. Mitali Gupta	Bundelkhand University, Jhansi, U.P	Internship	Completed	26-06-2023 to 04-08-2023

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

Ms. Kasturi Saha	Hansraj College, University of Delhi.	Internship	Completed	08-06-2023 to 07-08-2023
Mr. Atiqul Islam	Nowgong College, Nagaon, Assam	Internship	Completed	20-06-2023 to 07-08-2023
Mr. Suriya S.	V.S.B. Engineering College, Tamil Nadu	Internship	Completed	02-07-2023 to 08-08-2023
Mr. Vignesh N	V.S.B. Engineering College, Tamil Nadu.	Internship	Completed	03-07-2023 to 10-08-2023
Mr. Abhishek Motilal Upadhyay	Parul Institute of Applied Sciences, Parul University	Internship	Completed	26-06-2023 to 11-08-2023
Mr. Shreyash Vijay Andagonde	Sant Gadge Baba Amravati University, Amravati, Maharashtra	Internship	Completed	21-06-2023 to 21-08-2023
Mr. Rohan Sunil Warkhedkar	Sant Gadge Baba Amravati University, Amravati, Maharashtra	Internship	Completed	21-06-2023 to 21-08-2023
Mr. Chandramani Batsh	Lalit Narayan Mithila University, Bihar	Internship	Completed	22-06-2023 to 22-08-2023
Ms. Daphishisha Phawa	Pub-Kamrup College under Assam Science and Technology University, Assam	Internship	Completed	01-06-2023 to 01-08-2023
Mr. Pragyan Bhardwaj	Assam Engineering College , Jalukbari, Guwahati-781013	Internship	Completed	08-06-2023 to 26-08-2023
Mr. Prabah Prasad Kalita	Assam Engineering College , Jalukbari, Guwahati-781013	Internship	Completed	08-06-2023 to 26-08-2023

Ms. Tanmi Kundu	Rajiv Gandhi University, Arunachal Pradesh	Internship	Completed	04-01-2024 to 19-02-2024
Mr. S. Gopinath	Institute of Science and Technology (Ramapuram Campus), Chennai	Internship	Completed	02-01-2024 to 23-02-2024
Mr. V L Vibash Kalyaan	SRM Institute of Science and Technology, Chennai	Internship	Completed	01-01-2024 to 01-03-2024
Miss. Rumi Parbin	University of Science and technology (USTM), Meghalaya	Internship	Completed	29-12-2023 to 12-03-2024
Mr. Mohit Pandey	Teerthanker Mahaveer College of Pharmacy, Uttar Pradesh	Internship	Completed	16-01-2024 to 14-03-2024
Mr. Kaushalendra Kumar Mishra	Teerthanker Mahaveer University, Teerthanker Mahaveer College of Pharmacy, Uttar Pradesh	Internship	Completed	16-01-2024 to 15-03-2024
Miss. Panasmita Bharadwaj	Cotton University, Guwahati, Assam	Internship	Completed	28-12-2023 to 20-03-2024
Miss. Pragya Parasar	Cotton University, Guwahati, Assam	Internship	Completed	28-12-2023 to 20-03-2024
Miss. Debosmita Saha	Dibrugarh University, Assam	Internship	Completed	08-01-2024 to 15-02-2024
Mr. Abhishek Das	Cotton University, Assam	Internship	Completed	28-12-2023 to 31-03-2024
Miss. Madhusmita Barman	Cotton University, Assam	Internship	Completed	28-12-2023 to 31-03-2024

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

Mr. Mohammed Asif J	VSB Engineering College, Karur, Tamil Nadu	Internship	Completed	05-01-2024 to 30-01-2024
Mr. Aravind Sai Bharathy K	VSB Engineering College, Tamilnadu, India.	Internship	Completed	05-01-2024 to 30-01-2024
Miss. Shruti Jaiswal	University of Science and Technology (USTM), Meghalaya	Internship	Ongoing	01-01-2024 to till date
Mr. Junaram Rarandhara	Dibrugarh University Assam	Internship	Ongoing	29-12-2023 to till date
Mr. Shiva Prasad Medhi	Gauhati University, Assam	Internship	Ongoing	03-01-2024 to till date
Mr. Hombaha Bahadur Newar	Gauhati University, Assam	Internship	Ongoing	03-01-2024 to till date
Mr. Rupkasen Kropi	Darrang College, Tezpur, Assam	Internship	Ongoing	03-01-2024 to till date
Miss. Umme Kulsuma Choudhury	University of Science and Technology (USTM), Meghalaya	Internship	Ongoing	01-01-2024 to till date
Mr. Dhandapani R,	VSB Engineering College, Tamilnadu, India.	Dissertation	Completed	08-02-2023 to 23-05-2023
Mr. Tejas Parasmal Bedmutha	NIPER Guwahati	Dissertation	Completed	25-01-2023 to 20-06-2023
Mr. Shailendra Kumar Mishra	NIT Patna, Bihar	Dissertation	Completed	23-01-2023 to 23-06-2023
Mr. Kamal Krishna Sharma	Gauhati University , Assam	Dissertation	Completed	09-02-2023 to 08-06-2023
Ms. Bhanita Deka	Gauhati University , Assam	Dissertation	Completed	09-02-2023 to 08-06-2023
Mr. Mannem Mounish Reddy	Yogi Vemana University Kadapa, Andhra Pradesh	Dissertation	Completed	15-02-2023 to 30-08-2023

Miss. Sritama Banerjee	Techno India University, Kolkata	Dissertation	Completed	03-07-2023 to 29-11-2023
Mr. Suraj Kumar Chatterjee	Techno India University, Kolkata	Dissertation	Completed	03-07-2023 to 29-11-2023
Mr. Nishanta Kakati	NIPER Guwahati, Assam	Dissertation	Ongoing	12-06-2023 to till date
Miss. Panchi Rani Narah	NIPER Guwahati, Assam	Dissertation	Ongoing	03-07-2023 to till date
Miss. Pratiksha Somnath Kumkar	NIPER Guwahati, Assam	Dissertation	Ongoing	07-07-2023 to till date
Miss. Dhanwantari Behera	Srimanta Sankaradeva University of Health Sciences	Dissertation	Ongoing	01-01-2024 to till date
Miss. Sreeya Nayak	Siksha “O” Anusandhan University, Odisha	Dissertation	Ongoing	08-01-2024 to till date
Miss. Monalisha Patra	Siksha “O” Anusandhan University, Odisha	Dissertation	Ongoing	08-01-2024 to till date

List of PhD Awardees

Name of the Research Scholars	Name of supervisor	Title of the thesis	Ph.D. awarding university	Date
Dr. Shabiha Nudrat Hazarika	Dr. Debajit Thakur	Assessment of endophytic bacteria prevalent in Tea (<i>Camellia sinensis</i>) and their effect on growth promotion and disease suppression	Cotton University	01-01-2024
Dr. Bhuwan Bhaskar	Prof. Mojibur Rohman Khan	Study on microbial diversity of rice beer prepared by <i>Tiwa</i> community of Assam and its effects on mice gut microbes	Gauhati University	13-06-2023

Jahnabi Gogoi	Prof. Devasish Chowdhury	Hybrid Inorganic-Organic Nanocomposite with Tunable Electronic Properties for Catalytic and Sensing Applications	Gauhati University	PhD. Awarded on 31-10-2023
Paramita Choudhury	Prof. Rajlakshmi Devi	Molecular Insight Of The Bioactive Compound(S) Of Aromatic Rice (Joha) On High Fat Diet Induced Diabetes In Rat Model	Gauhati University	July 2024.
Dr. Ankita Deb	Prof. Devasish Chowdhury	Biogenic Carbon Dots and their Nanocomposites as Wound Healing and Chemo-/Bio-Sensing Materials	Gauhati University	01.08.2023
Dr. Kabyashree Phukan	Prof. Devasish Chowdhury	In Vitro and in Vivo Efficacy of Onion (<i>Allium cepa L.</i>) Peel Derived Gold Nano Bioconjugate as an Antioxidant and Anti-Inflammatory Agent.	Gauhati University	31/05/2023
Anjana Begum	Dr. Gautam Choudhury	Analysis of some unreliable single server queueing models rendering two-heterogeneous services under Bernoulli vacation policy	Gauhati University	1/05/2023
Dr.Swarnali Bhattacharjee	Dr. Rajlakshmi Devi	To evaluate the effects of bioactive fraction of <i>Garcinia pedunculata</i> Roxb. in diabetes induced cardiac dysfunction in Wistar rats.	Gauhati University	28-06-2023
Dr. Elima Hussain	Dr. Lipi B. Mahanta	A Study on Automated Methods for Detection of Cervical Malignancy using Images of Visual Inspection, Colposcopy and Pap Smear	Gauhati University	01/05/2023

Palash Jyoti Boruah	Prof. Heremba Bailing	Studies on Nanomaterial Synthesis using Plasma-Liquid Interaction and Investigation of their Catalytic Activity	Gauhati University	29.02.2024
Dr. Chandana Malakar	Prof. Suresh Dekka	Effect of Rhamnolipid Biosurfactant and Rhamnolipid coated Zinc Oxide Nanoparticles on Wound Healing with reference to Antimicrobial Activity against Staphylococcus aureus	Gauhati University	16/08/2023
Bandita Kalita	Prof. Neelotpal Sen Sarma	Conjugated and Polymeric Materials for Sensing and Adsorption Applications	Cotton University	22-09-2023
Ibnul Farid	Prof Heremba Bailing	Development of Low Loaded Platinum Based Catalysts Electrode for PEM Fuel Cell	Gauhati University	29-02-2024

Placement of the IASST alumni

Name of the member	Name of the supervisor	Position and current laboratory
Dr. Shabiha Nudrat Hazarika	Dr. Debajit Thakur	Received Biotechnology Ignition Grant-North East Region (BIG -NER) Special Call 2.0, a flagship programme of the DBT- Biotechnology Industry Research Assistance Council (BIRAC), Govt. of India in the year 2022-23 and joined as an <i>Incubatee</i> at BIRAC-BioNest facility at IASST, Guwahati.
Dr. Bhuwan Bhaskar	Prof. Mojibur Rahman Khan	Joined as a Post-Doctoral Fellow, Adelson School of Medicine Ariel University, Israel

Dr. Tulsi K. Joishy	Prof. Mojibur Rahman Khan	Joined as a Post-Doctoral Fellow, Vanderbilt University Medical Centre, Nashville, TN 37232, USA
Dr. Arun Kumar	Prof. Mojibur Rahman Khan	Joined the Institute of Biochemistry and Biophysics (IBB), Polish Academy of Science (PAS), Warsaw, Poland.
Mr. Bablu Basumatary	Prof. Arup Ratan Pal	Joined as a Postdoc fellow at IIT-Bombay
Dr. Elima Hussain	Dr. Lipi B. Mahanta	Joined as an Assistant Professor at Dept. of Computer Science & Engineering, K.L. University, Vijayawada
Dr. Rupshikha Patowary	Dr. A. Devi	I joined as an assistant professor at Royal Global University, Guwahati.
Dr. Animesh Roy	Dr. L. B. Mahanta	Joined as an Assistant Professor at SRM Institute of Science and Technology, Chennai, India
Dr. Mritunjoy Prasad Ghosh	Prof. Devasish Chowdhury	Joined DST-SERB NPDF position at IASST,
Dr. Ibnul Farid	Prof Heremba Bailung	I joined as an Assistant Block Development Officer at Dalgaon Sialmari Development Block, P&RD Dept. Govt. of Assam
Dr. Anjana Begum	Dr. Gautam Choudhury	I joined as an assistant professor in the Department of Statistics, Nowgong Girls' College.
Dr. Swarnali Bhattacharjee	Prof. Rajlakshmi Devi	Joined as an Assistant Professor, Gurucharan College, Silchar
Dr. Paramita Choudhury	Prof. R. Devi	Joined as an Assistant Professor, Dakshin Kamrup College, Mirza, Guwahati, Assam
Dr. Ankita Deb	Prof. Devasish Chowdhury	Joined as a Guest Lecturer at Guwahati University, Assam
Dr. Chandana Malakar	Prof. Suresh Deka	Joined as a DBT-Research Associate (DBT-RA) at Department of Animal Biotechnology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati
Bandita Kalita	Prof. Neelotpal Sen Sarma	Joined as Project Associate II DST-PURSE Project Gauhati University
Dr. Kabyashree Phukan	Prof. Devashish Chowdhury	Joined as an Assistant Professor, Department of Zoology, Pandit Deendayal Upadhyaya Adarsh Mahavidyalaya, Amjonga, Goalpara

PHOTO GALLERY



Physical Sciences Division



Life Sciences Division



Administration



SAIC



Engineering Cell



IT Cell



Library



R&D Cell



Academic Cell



Bionest



Outsource Employees



Editorial Committee



Academic Staff



Outsource MTS



Security Personnel

**EMINENT SCIENTISTS / PERSONALITIES WHO VISITED IASST AND
DELIVERED LECTURE UNDER THE BANNER OF
THE 75TH YEAR OF INDIA'S INDEPENDENCE-
“AZADI KA AMRIT MAHOTSAV”**

Sl. No.	Name of Scientists/ Speaker	Affiliation	Title of the Talk/ Lecture	Title of the Event	Date
1.	Dr. Samuel Rout	Manager, Technology Transfer Office, KIIT-TBI, Guwahati	Intellectual Property Rights, it's commercialization and Tech Transfer	National Workshop on Intellectual Property Rights, its commercialization and technology transfer	05 th April 2023
2.	Prof. Jayanta Kumar Barman	Department of Community Medicine, SJN Homoeopathic Medical College & Hospital, Guwahati	Homoeoparivar: one health, one family	World Homoeopathy Day	10 th April 2023
3.	Dr. Debasish Datta	Scientist-B, Patent Information Centre (PIC), Science & Technology Division, ASTEC	Intellectual property rights for safeguarding R&D-based innovations and entrepreneurship development	World Intellectual Property Day- 2023	26 th April 2023
4.	Prof. Pedro A. Fernandes	Professor, University of Porto, Portugal	High-performance Computing in Enzymology and Proteomics	Talk by a visiting scientist, Lecture Series: Azadi ka Amrit Mahotsav	28 th April 2023
5.	Prof. Arun Bandyopadhyay	Director, CSIR-IICB, Kolkata	R&D is not driven by profit alone	DST Foundation Day	03 rd May 2023

6.	Professor Ramesh C. Dekka	Former Director, AIIMS, New Delhi	Ethical issues in doing Research and an Overview of ENT diseases	National Lecture Series: Azadi ka Amrit Mahotsav	06 th July 2023
7.	Mr. Akshay Prasanna	Customer Success Specialist, Turnitin, Bengaluru, Karnataka, India	Usage of iThenticate	Online training for software usage	12 th July 2023
8.	Prof. Parthasarathi Mukhopadhyaya	HoD, Dept. of Library and Information Science, University of Kalyani, Kalyani, West Bengal	FAIR Access to Research: Findable, Accessible, Interoperable, Reusable: What Librarians Can Do	National Librarian's Day	11 th August 2023
9.	Prof. R. M. Kini	Dept. of Biological Sciences, National University of Singapore	From toxin to therapeutics development of Cardiovascular Agents: development of Cardiovascular Agents	National Lecture Series: Azadi ka Amrit Mahotsav	11 th August 2023
10.	Mr. Diganta Barman	Rtd. Senior Technical Director, NIC and presently Registrar, (IT), Gauhati High Court	Cyber hygiene and security	Vigilance Awareness Week	04 th October 2023
11.	Prof. Bishnu Prasad Sarma	Former Principal, Govt. Ayurvedic College and Hospital, Guwahati, Assam	Access to diabetes care	World Diabetes Day	14 th November 2023

12.	Abhijeet Patil	Senior Business Solution Consultant, Pre-Sales Team South & Southeast Asia	Usage of Derwent Innovation, a proprietary patent research application	Training on Derwent innovation application	15 th December 2023
13.	Prof. Timir Tripathy	Professor, Dept. Of Zoology, NEHU	A historical expedition of Scientific Milestones	Proteomics Day celebration	18 th March 2024
14.	Dr. Sudipto Roy	Senior Principal Scientist II and Adjunct Faculty Member with the Department of Biological Sciences and the Department of Paediatrics of the National University of Singapore	Cilia and Ciliopathies	National Lecture Series: Azadi ka Amrit Mahotsav	19 th March 2024
15.	Dr. Pannuru Venkatesu	Department of Chemistry University of Delhi, Delhi	Ionic Liquids as green solvents for enhanced stability of proteins against multiple stresses	National Lecture Series: Azadi ka Amrit Mahotsav	22 nd March 2024

**SCIENTIFIC TALK, LECTURE DELIVERED BY IN-HOUSE FACULTIES
UNDER THE BANNER OF 75TH YEAR OF INDIA'S INDEPENDENCE-
“AZADI KA AMRIT MAHOTSAV”**

Sl. No.	Name of the Speaker	Affiliation	Title of the talk/ lecture	Date
1.	Dr. Sheo Shankar Pandey	Ramalingaswami Fellow, IASST	Inside the Plant Microcosm: Unveiling the Molecular Realm of Bacterial Virulence and Lifestyle	04 th August 2023
2.	Dr Vijay Kumar Singh	Assistant Professor II, IASST	Overview of Research Journey: Bacterial Communication and Cross-Talk in Disease, Treatment and Beyond	10 th November 2023

3.	Prof. Ashis K. Mukherjee	Director, IASST Guwahati	Snakebite problem and hospital management of snakebites	08 th February 2024
4.	Prof. Ashis K. Mukherjee	Director, IASST Guwahati	Repurposing Small Molecule Inhibitors for Treating Snake Envenomation	10 th February 2024
5.	Prof. Ashis K. Mukherjee	Director, IASST Guwahati	WHY TO STUDY PROTEOMICS: Unlimited Opportunities ahead	18 th March 2024

Research Scholar's Presentation

Sl. No.	Date	Name of the presenter	Designation	Title of the presentation
1.	21 st April 2023	M. Bidyarani Devi	Research Scholar	Probiotics: Benefits and application in health and diseases
2.	21 st April 2023	Bhargab Kakati	Research Scholar	A glimpse into Heusler materials
3.	12 th May 2023	Bhaswati Devi	Research Scholar	Preparation of activated carbon from Euryale Ferox seed coat using a low cost activating agent for the removal of Pb(II) ions from water
4.	12 th May 2023	Prarthana Gogoi	Research Scholar	Surface waves in a dusty plasma
5.	19 th May 2023	Sushmita Nath	Research Scholar	Scorpion stings: understanding the risk and the treatment
6.	19 th May 2023	Hridoy Jyoti Bora	Research Scholar	Fumes of Hydrochloric Acid and its Portable Detection Approach
7.	09 th June 2023	Emee Das	Research Scholar	Evaluation of cationic dye removal from aqueous environment by using agricultural residues as bioadsorbent
8.	09 th June 2023	Saiyad Akhirul Ali	Research Scholar	Effect of nanomaterial incorporation on the property of the polymer (in-situ and ex-situ approach)
9.	23 rd June 2023	Anasuya Bharadwaj	Research Scholar	Soil organic carbon sink: wetlands

10.	23 rd June 2023	Ritika Das	Research Scholar	Mathematical Modelling of Acoustic gravity waves generated by ocean bottom fluctuations
11.	30 th June 2023	Chingtham Thanil Singh	Research Scholar	Probiotics: Harnessing the power of good bacteria
12.	30 th June 2023	Aritra Tarafder	Research Scholar	Zonal Flow Study in Linear Device
13.	07 th July 2023	Bablu Basumatary	Research Scholar	Synthesis of graphene based materials by plasma process and its applicability in conjunction with semiconductors for optoelectronics
14.	07 th July 2023	Sweety Biswasi	Research Scholar	Plasmon enhances organic thin film transistor (PTFT) through plasma based process
15.	14 th July 2023	Dev Madhubala	Research Scholar	Snake venom nerve growth factor-inspired designing of novel peptide therapeutics for the prevention of paraquat-induced dysfunctions in PC-12 cells
16.	14 th July 2023	Himadri Nath	Research Scholar	Effect of pH on the properties of Protein ultra-thin films
17.	21 st July 2023	Rosy Mahato	Research Scholar	Peptide-based Drug: Promising therapeutic candidate for Neuroprotection
18.	21 st July 2023	Rahul Sonkar	Research Scholar	Development of plasmonic nanostructured materials
19.	28 th July 2023	Rahul Kumar	Research Scholar	Caenorhabditis elegans as a model for screening of compounds against snake venoms
20.	28 th July 2023	Nur Jalal Mandal	Research Scholar	Catalysis and its importance
21.	18 th August 2023	Bhagya Lakhmi Rajbongshi	Research Scholar	Medicinal plants in Neurodegenerative disorder- A need for effective therapeutic approach
22.	18 th August 2023	Reema	Research Scholar	Comparative Analysis of Direct Cold Atmospheric Plasma Treatment vs Plasma Activated Water for the Deactivation of omicron Variant of SARS-CoV-2

23.	01 st September 2023	Deepjyoti Kalita	Research Scholar	The Gut-Brain Axis: Gut Microbiome in Management of Brain Health
24.	01 st September 2023	Deva Raj Mahanta	Research Scholar	Gastric Cancer Detection and Classification Using Endoscopy Visuals
25.	08 th September 2023	Hempriya Tiwari	Research Scholar	Fecal Microbiota Transfer: A novel approach to Gut Health
26.	08 th September 2023	Reetesh Borpatra Gohain	Research Scholar	Cold Atmospheric Plasma for Biomedical Application
27.	15 th September 2023	Rictika Das	Research Scholar	Exploration of pesticide-tolerant Actinobacteria for beneficial tea insights.
28.	15 th September 2023	Khomdram Bijoy Kumar Singh	Research Scholar	Plasma based synthesis of 2D nanomaterials and their application in light sensitive devices
29.	22 nd September 2023	Anupam Bhattacharya	Senior Research Associate	Genome organization and diseases– A genomic perspective.
30.	22 nd September 2023	Debamoy Pegu	Research Scholar	Insights into Helium (He) irradiated Tungsten (W).
31.	29 th September 2023	Juri Saikia	Research Scholar	Orchid endophytic actinobacteria for plant growth promotion and biocontrol of fungal phytopathogens.
32.	29 th September 2023	Sadikul Alom	Research Scholar	Heusler Alloy in Spintronics
33.	06 th October 2023	Chingakham Juliya Devi	Research Scholar	Bioprospecting of endophytic actinomycetia for improvement of tea plant health.
34.	06 th October 2023	Nikesh Kumar	Research Scholar	Starch Based Biopolymer thin films.
35.	27 th October 2023	Nonibala Gurumayum	Research Scholar	An insight into age-associated intestinal barrier permeability, microbial dysbiosis, and inflammation.
36.	27 th October 2023	Nabajit Barman	Research Scholar	Exploring the Potential of Two-Dimensional Nanomaterials as Biosensors: A Cutting-Edge Approach

37.	01 st December 2023	Pranami Bharadwaj	Research Scholar	Exploration of endophytic Actinomycetia for biocontrol and sustainable tea productivity
38.	01 st December 2023	Tapabrat Thakuria	Research Scholar	AI-Powered Oral Cancer Detection Using Smartphone Images
39.	08 th December 2023	Aditya Narayan Konwar	Research Scholar	Secondary metabolites from soil derived <i>Actinomycetia</i> active against clinically important multi-drug resistant bacterial pathogens.
40.	08 th December 2023	Punam Talukdar	Research Scholar	Cold Atmospheric plasma for the treatment of inflammation: An in vitro study.
41.	22 nd December 2023	Somarani Dash	Research Scholar	Microbiome research in <i>C. elegans</i> establishing promising therapeutic for neurodegenerative diseases.
42.	05 th December 2023	Priya Bhatt	Research Scholar	Exploring The Effect of Low- temperature Plasma on Biomolecular Self-assembly
43.	18 th December 2023	Sazzadur Rahman	Research Scholar	Developing biopolymer nanocomposite materials for food packaging applications
44.	12 th January 2024	Paran Baruah	Research Scholar	NeuroNourish: unlocking the power of mushrooms for cognitive wellness
45.	12 th January 2024	Priya Bhatt	Research Scholar	Ionic liquids as stabilizers for protein- based therapeutics
46.	19 th January 2024	Deepsikha Swargiary	Research Scholar	Diabetic Nephropathy: a Tangled Web to Unweave.
47.	19 th January 2024	Palsah Jyoti Medhi	Research Scholar	M-Xenes: The 2D Transition Metal Carbides as an Electrocatalyst for Water Splitting
48.	02 nd February 2024	Gurumayum Shalini Devi	Research Scholar	Role of SGLT2 Inhibitors in Diabetic Nephropathy
49.	02 nd February 2024	Shivam Kumar	Research Scholar	The catalytic dominion
51.	16 th February 2024	Hirak Jyoti Sarma	Research Scholar	Performance analysis of a single server retrial queue with two heterogeneous services under re-service policy.

52.	23 rd February 2024	Rajashree Dey	Research Scholar	Hypopharyngeal Cancer: Identifying the risk factor with reference to Assam
53.	01 st March 2024	Injamamul Haque Ahmed	Research Scholar	Predicting Tsunamis - How much can one achieve?
54.	08 th March 2024	Anushree Roy	Research Scholar	Dietary Emulsifiers: Synthetic Surfactants v/s Biosurfactants
55.	08 th March 2024	Suvankar Deka	Research Scholar	The 10 milliamp sprint of Marigolds - A complex circuit race between bimetallic and trimetallic layered double hydroxides
56.	15 th March 2024	Semim Akhtar Ahmed	Research Scholar	SGLT-2 inhibition by Phytomedicines to address the unmet needs in Diabetic Nephropathy
57.	15 th March 2024	Manju Kumari Jaiswal	Research Scholar	BEND IT AT THE JUNCTION : Implications on Photoelectrochemical water splitting
58.	22 nd March 2024	Deepsikha Swargiary	Research Scholar	Care, Management and Experimental Techniques of Laboratory Animals
59.	22 nd March 2024	Gautam Gogoi	Research Scholar	Understanding wave dissipation mechanism in the ocean

IASST Laboratory visit programme for promotion of laboratory experience-based science teaching & learning

Sl. No.	Name of School/ Colleges/ Universities, etc.	Address	No. of Students/train ee visitors who visited	Date of visit
01.	Faculty members of Science College, Bodofa U.N Brahma College, and Aronai College.	Kokrajhar, Assam	13	23 rd & 24 th May 2023
02.	Dept. of Zoology, Gauhati University	Guwahati, Assam	08	19 th June 2023
03.	Holy Home Secondary School	Guwahati, Assam	16	17 th August 2023
04.	Dept. of Zoology, Assam Don Bosco University	Sonapur, Assam	37	26 th September 2023

05.	Dept. of Biotechnology, Royal School of Biosciences, Assam Royal Global University	Guwahati, Assam	30	04 th October 2023
06.	Dakshin Kamrup College	Mirza, Assam	18	04 th November 2023
07.	Suren Das College	Hajo, Assam	19	04 th November 2023
08.	Rangia College	Rangia, Assam	18	04 th November 2023
09.	Barkhetri College	Narayanpur, Mukalmua, Nalbari, Assam	19	04 th November 2023
10.	Anundoram Borooah Academy Degree College	Pathsala, Assam	10	04 th November 2023
11.	Adarsha Jatiya Vidyalaya,	Guwahati, Assam	09	29 th December 2023
12.	Adarsha Jatiya Vidyalaya	Pathsala, Assam	01	29 th December 2023
13.	Adarsha Jatiya Vidyalaya	Tangla, Assam	01	29 th December 2023
14.	Adarsha Jatiya Vidyalaya	Sivasagar, Assam	01	29 th December 2023
15.	Regents Academy	Guwahati, Assam	07	29 th December 2023
16.	DRAONE	Bongaigaon, Assam	01	29 th December 2023
17.	Dept. of Botany, Arya Vidyapeeth College	Guwahati, Assam	22	07 th March 2024
18.	Dept. of Zoology, Arya Vidyapeeth College	Guwahati, Assam	53	15 th March 2024

Major Annual Events

IASST Embarks on Successful Cleanliness Drive During Swachhata Pakhwada Initiative

As a part of the Swachhata Pakhwada initiative between 1st -15th May 2023, IASST launched an in-house cleanliness drive at the campus. The Director of IASST, Prof. Ashis K. Mukherjee, led by example and joined hands with all the staff, faculty, and students to promote a culture of cleanliness and hygiene. He emphasized the collective responsibility of all to keep the surroundings clean and hygienic.

The successful implementation of the Swachhata Pakhwada initiative at IASST is a testament to the immense power of collective action and community engagement in promoting a culture of cleanliness and hygiene. It furnishes an example of the role of the people in keeping our surroundings clean and hygienic.



The Director, IASST, alongwith the IASST family members promoting the cleanliness drive



Valedictory function celebrating the IASST workers

IASST Hosts Special Talk in Celebration of DST Foundation Day

IASST organized a special talk to celebrate the 53rd Foundation Day of the Department of Science and Technology (DST) on 3rd May 2023. The event was graced by Guest of Honour, Prof. Arun Bandyopadhyay, Director at CSIR-IICB, Kolkata. The celebration of DST's Foundation Day marked an opportunity to reflect on the department's contributions to the tangible growth and development of science and technology in India.

In his welcome address, Prof. Ashis K Mukherjee, Director IASST stated DST's remarkable achievements and contributions to developing science and technology in India. In the talk titled 'R & D not driven by profit alone', Prof. Arun Bandyopadhyay discussed the

crucial role of research and development in promoting innovation and contributing towards society's betterment. The event provided a platform to discuss the significance of R&D in fostering scientific research, innovation, and development for the betterment of the society.



Prof. Arun Bandyopadhyay delivering his speech.

IASST Celebrates International Day of Yoga: Advocating Health and Harmony

IASST embraced the spirit of the International Day of Yoga with fervor on 21st June, 2023 as members gathered to celebrate Yoga at fostering physical, mental, and spiritual well-being.

The event commenced with an inspiring speech by the Director of IASST, emphasizing the importance of integrating yoga into daily life and promoting this traditional Indian art form.

The audience was treated to a live yoga demonstration by Mr. Prabin Das, a renowned Yoga Guru. The event underscored the profound benefits of yoga in promoting physical fitness, mental clarity, and emotional balance.



IASST Honors Dr. S. R. Ranganathan on National Librarians' Day

On the occasion of National Librarians' Day on 11th August 2023, the Knowledge Research Centre (KRC) at IASST paid homage to the distinguished legacy of Dr. Shiyali Ramamrita Ranganathan. Prof. Parthasarathi Mukhopadhyay, HoD (Library and Information Science (DLISc), University of Kalyani, Kolkata, was invited on the occasion to deliver a talk session. The event was graced by the presence of distinguished guests from the LISc departments of several educational institutions.



Prof. Parthasarathi Mukhopadhyay, Prof. Narendra Lahkar, Prof. Sanjay K. Singh, Dr. Dhruvajit Das, and Dr. Tilak Hazarika posing for a group photo with the Director and members of IASST

IASST Celebrates 77th Independence Day with Patriotic Fervor and Academic Excellence Recognition

The ceremonial proceedings commenced on 15th August, 2023, with the Director of IASST, Prof. Ashis K. Mukherjee, hoisting the National Flag. Prof. Mukherjee's inaugural address echoed with an inspiring spirit of patriotic enthusiasm, emphasizing the institution's steadfast commitment to serving the country.

As a testament to the institute's unwavering commitment to fostering academic excellence, the 77th Independence Day celebrations at IASST also honored the remarkable accomplishments of the children of IASST's employees who achieved excellence in the 10th and 12th board examinations of the 2023 session through a special felicitation program.

Instilling the feeling of patriotism in the hearts of people and invoking memories of India's journey and those who have contributed to the creation of this great nation, the IASST fraternity joined in unison to celebrate the "Har Ghar Tiranga" campaign.



Hon'ble Director, IASST, delivering his lecture

IASST Unites for Swachhta Pakhwada Special Campaign 3.0

IASST commemorated Swachhta Pakhwada (Swachhta Hi Seva) Special Campaign 3.0 on 1st

October 2023 with a collective effort to promote cleanliness and hygiene. Led by the Director of IASST, the faculty, staff, and scholars participated in a cleaning drive to enhance the aesthetics and cleanliness of the institute's premises.

Under the initiatives organized as part of Swachhta Pakhwada, the IASST community actively engaged in various activities dedicated to promoting cleanliness and environmental sustainability. The Director of IASST, spearheading the initiative, emphasized the importance of Swachhta Pakhwada in fostering a culture of cleanliness and environmental consciousness. His leadership inspired all participants, encouraging active participation and commitment to maintaining cleanliness beyond the designated campaign period.



Few snapshots of the campus cleaning on the occasion of Swachhata Pakhwada

"Swachhata Hi Seva Special Campaign 3.0" A journey of sustainability and Environmental Consciousness

In response to directives from the Department of Science and Technology (DST), IASST executed the "Swachhata Hi Seva Special Campaign 3.0" from October 2nd to 31st, 2023, in alignment with the nationwide initiative. Key

focus areas included Record Management, Identification of Cleanliness Campaign Sites, Space Management Planning, and Scrap Disposal across all office and administrative sections. A dedicated cleanliness drive marked the campaign's highlight at the IASST campus on October 1st, 2023.

Fostering Integrity and Preventive Vigilance: IASST's Commitment during Vigilance Awareness Week 2023

Like every year, Vigilance Awareness Week was celebrated at IASST from 30th October 2023 to 5th November 2023 with the theme “Say no to corruption, commit to the nation.” On the advice of the Central Vigilance Commission, IASST conducted a three-month campaign from 16th August 2023 to 15th November 2023 for measures on Preventive Vigilance.

As part of preventive vigilance measures, IASST organized a talk on Cyber hygiene and security on 4th October 2023, featuring Mr. Diganta Barman Sr. I T Consultant, Gauhati High Court, Govt. of Assam & Former Deputy Director General, NIC, Meity, GOI.

The observance of Vigilance Awareness Week 2023 commenced on 30th October 2023 with the taking of the integrity pledge, which the Director administered, Prof. Ashis K. Mukherjee. Followed by a special talk in which Sri. Mukesh Sahay, IPS (Retd.), The former Director General of Assam Police was a special guest during Vigilance Awareness Week. In his speech, Prof. Devasish Chowdhury, Vigilance Officer of IASST, highlighted the measures taken at IASST to stop irregularities in purchases, etc.



Director, IASST administering Integrity pledge



Sri Mukesh Sahay giving a talk on Vigilance Awareness Week.

IASST, Guwahati Marks National Unity Day with 'Run for Unity' and Pledge Ceremony

IASST commemorated National Unity Day (Rashtriya Ekta Diwas) on 31st October 2023 with a spirited 'Run for Unity' event, showcasing solidarity and patriotism among its members. The event witnessed active participation from staff members, scientists, and research scholars, who came together to celebrate the spirit of unity and integrity that defines the nation. Led by Prof. A.K. Mukherjee, the Honorable Director of IASST, participants embarked on a run around the boundary of the institute's campus, symbolizing the collective resolve to uphold the ideals of unity and harmony. Prof. Mukherjee administered the National Unity Day pledge to all present. The solemn pledge reaffirmed the commitment of the IASST community to promote unity, peace, and fraternity among fellow citizens, transcending barriers of caste, creed, religion, and region.

IASST Foundation Day: Glorious 45th Anniversary, Pioneering Science and Societal Transformation

On 3rd November 2023, IASST marked its 45th anniversary with a spectacular two-day academic and cultural event, showcasing its

enduring commitment to scientific excellence in the Northeast region of India. The grand ceremony saw the graceful presence of distinguished dignitaries, including the DST Secretary, Prof. Abhay Karandikar, who inaugurated the foundation day virtually. Welcoming the dignitaries, Prof. Ashis K. Mukherjee, the Director of IASST, reflected on the 45-year journey of achievements and triumphs the institution has undergone.

DST Head AI Division, Shri Manoranjan Mohanty, was officially present and discussed the importance of academic institutions in fostering scientific growth. Vice Chancellor of Mizoram University, Prof. Dibakar Chandra Deka, delivered an interactive lecture session as the Dr. C.V. Raman Popular Lecture. Dr. Dipyaman Ganguly from IICB, Kolkata, and Prof. Pulok Mukherjee, Director of IBSD, Imphal, also contributed to the event by delivering the Dr. Dorothy Hodgkin Popular Lecture and an informative lecture on Bioresources from the Northeastern Region (NER), respectively. The two-day event featured interactive lecture sessions and held a certificate distribution ceremony for the Ph.D. awardees for the 2022-23 academic session. It also organized a day-long opportunity for college students to visit laboratories and experience state-of-the-art scientific equipment at IASST on 4th November, 2023.



Hon'ble Director, IASST, administering the pledge for unity



Group Photo session at the 45th Foundation Day of IASST



Few snapshots of the cultural extravaganza



Lab Visit during the IASST Foundation Day

IASST Annual Sports Week 2023: Celebrating Athleticism, Inclusivity, and Community Spirit

IASST recently concluded its Annual Sports Week 2023 to celebrate athleticism and camaraderie from 14th to 24th November, 2023.

Prof. Ashis Kr. Mukherjee, Director of IASST, inaugurated the sports week, emphasizing the institute's commitment to fostering a holistic environment for its community.

During the sports week, students, faculty, and staff performed many outdoor and indoor activities to promote physical skills and artistic

talents. Outdoor games like cricket, volleyball, and football in men's and women's categories enthralled the spectators with displays of skill and teamwork. Indoor competitions included table tennis, badminton, carom, chess, artistic events like *Rangoli* and drawing competitions, and singing and poem recitation competitions. In line with the Government's initiative to uplift village school children, IASST organized a drawing competition involving disadvantaged students from rural areas. A prize distribution ceremony was organized to acknowledge the participants' accomplishments, highlighting their dedication and outstanding performance throughout the exhilarating events.



Snapshots of Annual Sports Week



Drawing Competition for school children

IASST Honors National Constitution Day with a Solemn Oath-Taking Ceremony

In a poignant observance of National Constitution Day on 26th November 2023, IASST took center stage in celebrating the intricate tapestry of India's social, cultural, and ethnic diversity. Prof. Ashis Kr. Mukherjee, Director of IASST, spearheaded an oath-taking ceremony that resonated with a collective commitment to upholding justice, equality, and liberty. The ceremony serves as a poignant reminder of the responsibility of every member of the IASST community to safeguard the principles underpinning the Indian Constitution. In a display of unity and solidarity, the entire IASST fraternity joined in unison to read the Preamble of the Constitution.



Prof. Ashis Kr. Mukherjee, Director of IASST administering the oath taking ceremony

SAC meeting of IASST

The 14th SAC meeting of IASST from 18th to 19th December 2023 served as the platform to validate the research and development undertaken by IASST scientists. Prof. Seyed S. Hasnain, an eminent educationist & Chairman of IASST-SAC, presided over the meeting. He appreciated the recent scientific progress made under the dynamic leadership of Prof. Ashis K. Mukherjee, Director of IASST. The other members of SAC conveyed positive remarks about IASST's steadfast commitment to its research mandate and recognition of its trailblazing contributions in the NER region.



Joining in unison, the Director, IASST along with staff members of the institute, read the preamble of the Constitution of India



SAC members, along with the Director and faculty of IASST, posing for a group photograph at the SAC meeting

IASST Ignites Spirit on World Hindi Day, Advocates for Language Awareness and Promotion

In a vibrant celebration of World Hindi Day on 10th January 2024, IASST enthusiastically embraced the occasion, aiming to raise awareness about the use of the Indian language and address pertinent issues surrounding Hindi usage and promotion. The event also underscored the significance of recognizing and valuing the contributions of Hindi speakers.

Prof. Ashis Kr Mukherjee articulated IASST's

commitment to the cause. Mukherjee during his inaugural address. He highlighted the institute's steadfast dedication to enhancing the implementation of Hindi in all official settings, advocating for its prevalence across all facets of IASST's operations. The event's key highlight was the in-house speech competition organized for the institute's research scholars. The competition witnessed a surge of enthusiasm as scholars showcased their linguistic prowess for the language in an engaging topic, "Science for the Society."



World Hindi Diwas

IASST Honors Women Empowerment on 75th Republic Day

On 26th January 2024, the 75th Republic Day celebration at IASST stands as a poignant testament to the institute's unwavering commitment to uplifting and empowering women, paving the way for a more inclusive future.

The patriotic fervor soared as the National Flag was unfurled by IASST's Director, Prof. Ashis K. Mukherjee. In his inspiring inaugural address, Prof. Mukherjee accentuated the pivotal role of women in driving progress across diverse fields, including science, technology, and research. The day's festivities included a captivating cultural showcase, highlighted by a heartfelt felicitation program honoring the remarkable achievements of two influential

women from the Upasona Ethnic Food Society.



Hon'ble Director, IASST, saluting the National Flag of India

National Science Day: Celebrating Dr. C.V. Raman and Indigenous Innovations

The institute lit up excitedly on National Science Day as the IASST fraternity paid homage to the iconic scientist Dr. C.V. Raman.

The annual celebrations on 28th February 2024 were about "Indigenous Technologies for Vikshit Bharat," highlighting the power of home-grown innovations in shaping India's progress. Prof. Ashis Kr. Mukherjee, Director of IASST, echoed the institute's commitment to

boosting scientific education, aligning with national priorities outlined in the National Education Policy 2020.

The event featured enlightening talks by IASST's scientists, covering various scientific topics. Following the talks, an interactive discussion session with Bionest-IASST start-up entrepreneurs. Exciting highlights of the day included a poster presentation by IASST's research scholars and an exclusive quiz competition.



IASST Fraternity Pays Tribute to C.V. Raman

Major Events (Azadi ke Amrit Mahotsav)

World Homeopathy Day: Bridging Tradition and Modern Medicine for Holistic Healthcare

To celebrate India's 75 years of Independence- "Azadi Ka Amrit Mahotsav", the Institute of Advanced Science and Technology (IASST), commemorated- "World Homoeopathy Day" on 10th April, 2023. Dr Jayanta Kr. Barman, Professor, Department of Community Medicine, SJN Homeopathic Medical College & Hospital, Guwahati, was invited as the guest of honor.

Introducing homeopathy as a holistic medical therapy that is believed to stimulate the body's

natural healing processes, Prof. A. K. Mukherjee, Director, IASST, spoke about the importance of conducting high-quality research on homeopathy to be applied in conjunction with other types of healthcare in light of contemporary medicine and technology. Prof. Jayanta Kr. In his address, Barman discussed the significance of this year's theme for the occasion- 'Sarwajan Swasth- One Health, One Family' and explained how homeopathy therapy might be a low-cost strategy for families from disadvantaged groups. The lecture programme concluded with an interactive question-answer session with Prof. Barman.



Prof. A. K. Mukherjee and Prof. Jayanta Kr. Barman delivering their talks

Greening the Future: IASST Celebrates World Earth Day with Plantation Drive

Promoting community building and environment consciousness, IASST organized an in-campus plantation drive on 22nd April, 2023 to commemorate the 'World Earth Day 2023'. Plant saplings were planted by Prof. A. K. Mukherjee, Director, Diganta Goswami, Registrar, and other IASST staff members. In line with the theme for 2023, 'Invest in our planet,' Prof. Mukherjee spoke on essential measures such as lowering carbon footprint, saving water, using renewable energy, and safeguarding animals and natural ecosystems to minimize environmental impact and maintain the Earth's natural resources.



Prof. A. K. Mukherjee, Director, IASST planting a sapling on the occasion of World Earth Day

Tackling Snakebite Challenges: A Breakthrough in Medical Education

In a ground-breaking endeavour, IASST organized a Continuous Medical Education (CME) session on 8th February, 2024. Focused on addressing the intricate challenges of managing snakebite incidents, this exclusive gathering was a collaborative platform to tackle a pressing issue declared a neglected tropical disease by the WHO in 2017.

In association with the Indian Medical Association, Assam Chapter, the CME session marked a significant step forward in addressing the complexities of snakebite incidents, reaffirming the importance of collaborative learning and action in medical management.

Renowned for his expertise in toxicology, Prof. Ashis K. Mukherjee, Director of IASST and chief event patron, stressed the need to shed light on this often-overlooked area of research. He emphasized IASST's commitment to bridging this gap by providing a collaborative platform to address this critical issue.

The session witnessed the presence of esteemed dignitaries from various medical departments in the state, including Arunima Goswami, President of the IMA, Assam Chapter, Dr. N.S Tishya, State Surveillance Officer, IDSP and Dr.

S.A. Laskar, State Nodal Officer, NHM. Distinguished experts in the field, such as Dr. Dayal Bandhu Majumdar, Calcutta Medical College and Dr. Sadananda Rout from Vighnagar Nursing Home, Pune, Dr. Surajit Giri representing Demow Community Health Center, Sivasagar, and Dr. M.V. Khandikar, Technical Director at PSVPL, Pune, contributed valuable insights on various topics related to snakebite management.

Driving Innovation and Collaboration: DST Autonomous Institutes' Conclave 2023 at IASST

The Institute of Advanced Science and Technology (IASST) recently hosted the prestigious DST Autonomous Institutes' (AI) Conclave 2023 from 9th to 10th May 2023. Virtually inaugurated by Dr. Jitendra Singh, Hon'ble Minister of State for Science, Technology, and Earth Sciences, the event marked a significant milestone in fostering progress and innovation in the Northeastern region.

With participation from 30 officials representing autonomous institutes, service organizations, and professional bodies under the Department of Science and Technology (DST), the conclave provided a platform for showcasing diverse expertise and initiatives driving scientific advancement.

Dr. Srivari Chandrashekhar, Secretary of DST, articulated the conclave's mission to propel India forward in science and technology by aligning with the vision and mandates of autonomous research institutes. His remarks underscored the commitment to leveraging scientific prowess for the nation's growth.

Prof. A.K Mukherjee, Director at IASST, emphasized the imperative of nurturing emerging fields of science and technology while fostering collaboration between basic science

and medicine to tackle public health challenges effectively.

The conclave served as a collaborative forum for creativity and problem-solving, offering a vital platform for R&D organizations nationwide to address shared challenges and drive collective progress. It highlighted the importance of synergy among autonomous institutes in driving innovation and fostering a conducive scientific research and development ecosystem.



Director of IASST sharing the moment with Directors of AI institutes respectively

Driving Innovation for a Sustainable Future: IASST Celebrates National Technology Day

The National Technology Day was celebrated on 11th May 2023 by IASST in association with BioNEST-IASST in conjunction with Swachhata Pakhwada, a national campaign to promote cleanliness and hygiene for a healthy and sustainable future. The event is celebrated annually to honor the achievements and contributions of scientists, researchers, engineers, and entrepreneurs in technology.

Guest speaker of the occasion, David Gogoi, Co-Founder and Director of Zerund Manufacturing Pvt. Ltd, shared his entrepreneurial journey of manufacturing sustainable construction material called 'plastic embedded lightweight bricks' from recycled

plastic waste. The virtual seminar had participants and innovators engaged in discussions with the speaker to delve into the technical intricacies of the product

Towards a Greener Future: IASST Marks World Environment Day with Action and Awareness

IASST, in collaboration with the Indian Academy of Science, Bangalore, observed 'World Environment Day' on 5th June, 2023, as part of the 75th anniversary of India's independence, Azadi Ka Amrit Mahotsav.

The extensive array of events spanning from 24th May to 5th June, 2023 formed a comprehensive campaign to raise awareness about environmental conservation and combat the usage of single-use plastics in and around the IASST campus. Led by the Director of IASST, Professor Ashis K. Mukherjee, a series of engaging activities were organized under the theme of "Beat Plastic Pollution". The first round of events included a wide range of events, such as a thorough campus cleaning campaign, persuasive campaigns to reduce food and electronic waste a series of initiatives for waste recycling, a plantation drive on the campus, and a bicycle rally for raising awareness were organized during this period. As part of the second round of activities, the proceedings commenced with a sapling plantation drive on 5th June 2023, followed by a solemn pledge-taking ceremony led by the Director alongside the IASST community, serving as a poignant reminder of their unwavering commitment to the environment. The event continued with the inauguration of the wall magazine of IASST by the esteemed Chief Guest, Umesh Chandra Kulshrestha, followed by a series of expert talks and the presentation of a concise documentary on stage, which encapsulated the comprehensive observations and highlights of World Environment Day 2023 at IASST.



Prof. Umesh C. Kulshreshtha planting a sapling

IASST Marks World Diabetes Day with a Talk on Access to Diabetes Care

On 14th November, 2023, Professor Bishnu Prasad Sarma, Former Principal of Govt. Ayurvedic College and Hospital, Guwahati, Assam, delivered an enlightening talk at the Institute of Advanced Study in Science and Technology (IASST) on World Diabetes Day.

During the introductory speech, Professor Ashis Kr. Mukherjee, Director of IASST, emphasized the institute's phytopharmaceutical mission, highlighting its commitment to understanding plant medicinal mechanisms and drive these into drug development and research in the field of diabetes care. Professor Sarma's presentation focused on the crucial topic of "Access to diabetes care," shedding light on essential aspects of managing diabetes and promoting awareness about the disease.



Prof. Bishnu Prasad Sarma delivering his awareness talk on World Diabetes Day

Empowering MSMEs: Bio-NEST IASST Hosts Expert Talk Session on World MSME Day

On 27th June, 2023, Bio-NEST IASST organized a comprehensive expert talk session to commemorate World Micro, Small & Medium Enterprises (MSME) Day. The event aimed to shed light on the challenges and opportunities MSMEs face and explore ways to support their growth and development.

The session commenced with an inaugural speech by Prof. Ashis K. Mukherjee, Director of IASST, who emphasized the crucial role of MSMEs as drivers of economic development in the country. His insightful remarks set the tone for the engaging discussions that ensued.

Renowned speakers Mr. L.K. Parganiha, Deputy Director and Head, IEDS, MSME-DFO, Guwahati, and Mr. S.S. Baruah, Assistant Director Gr-1, IEDS, MSME-DFO, Guwahati, shared valuable insights into the challenges faced by entrepreneurs in the MSME sector. They elaborated on various government schemes and initiatives to facilitate procurement opportunities for MSMEs.

Moreover, the speakers emphasized the role of digital platforms in empowering MSMEs and expanding their market presence. They discussed how digital technologies could be leveraged to streamline operations, access new markets, and improve competitiveness.

A significant emphasis was placed on the role of digital platforms in empowering MSMEs and expanding their market presence. The speakers highlighted how digital technologies can streamline operations, provide access to new markets, and enhance competitiveness for MSMEs.



A moment from Mr. L.K. Parganiha's talk

IASST's Cutting-edge Symposium on Snake Venom: A Global Endeavor

IASST recently concluded an enthralling two-day International symposium that delved into the fascinating world of snake venom on 9th & 10th February 2024. Spearheaded by Prof. Ashis K. Mukherjee, Director of IASST and the driving force behind SnakeSymp2024, the symposium sparked collaborative discussions to advance research in snake venom toxins.



Group photo at the CME event

The event drew diverse participants, representing esteemed institutions from around the world. Notable experts from several institutions participated in the event, including the National University of Singapore, the University of Malaya in Malaysia, and the University of Porto in Portugal. From the Indian front, institutes like the University of Mysore, IICB Kolkata, SRMIST Chennai, and IISc Bengaluru made significant contributions.

Local institutions such as IASST Guwahati, Mizoram University, Tezpur University, and Demow Model Hospital cum Health Centre, alongside several others from Assam, also actively participated. Adding to the symposium's dynamism were leading antivenom manufacturers like Vins Bioproducts Ltd.

Hyderabad and Premium Serums and Vaccines Pvt. Ltd. Pune, who lent their expertise to the discussions. The event also recognized the outstanding contributions of young scientists and poster presenters for their original research work in venom and toxins.



A momentous group photo session at the SnakeSymp 2024

Celebrating and Supporting Women in Science: International Day of Women and Girls in Science

On 12th February 2024 IASST hosted an engaging, interactive session to honour the International Day of Women and Girls in Science, spotlighting their invaluable contributions.



Director, IASST addressing the meeting

A thought-provoking panel discussion took center stage, led by Prof. Ashis K. Mukherjee, Director of IASST, and joined by Professors N. S. Sarma and L.B. Mahanta.

The discussion, chaired by Prof. Mukherjee, delved into strategies aimed at attracting more women to the field of science. Emphasizing the pivotal role of mentorship and the importance of fostering inclusive environments, the panelists shared insights to empower women in science.

IASST Celebrates Women's Day with Empowering Panel Discussion and Entrepreneurial Showcase

Resonating with the power of women in driving progress with inclusivity and self-resilience to become entrepreneurial successes in all sectors, the International Women's Day



IASST women taking centre stage on International Day of Women and Girls in Science

celebration at IASST on 08th March 2024 featured an insightful and interactive panel discussion on various topics. Smt. Violet Baruah, Retd. IPS officer Dr. Geetima Das Krishna, Head of the North East Desk at Invest India, Dr. Alakananda Das, President of the Indian Asean Business Council, and Dr. Aruna Deb Roy, Assoc. Dean & Assoc. Prof. at the Royal School of Commerce, Royal Global University, served as panelists for the session.

Fostering collaboration and networking with women entrepreneurs, IASST also organized an exhibition for entrepreneurs to showcase sustainable products and handlooms, aiming to raise awareness, provide motivation, and empower women to thrive in the entrepreneurial landscape.

Industry-Academia Conclave on Technology Transfer

Today, IASST marked a monumental occasion as it hosted a transformative Industry-Academia Conclave on Technology Transfer.

The event, held on 4th March 2024, aimed to foster collaboration between academia and industry, propelling innovation, commercialization, and the widespread adoption of cutting-edge technologies to benefit society.

It was led by Prof. Ashis Kr: Mukherjee, Director of IASST, the conclave aimed to translate innovative research into tangible real-world applications by uniting experts. The conclave featured a series of expert talk sessions led by distinguished scientists, including Prof. Pradeep Srivastava from TIFAC, DST, Dr. Harikrishna Varma and Dr. Roy Joseph from SCTIMST, Prof. R.N Singh from Himalayan Biochemie Herbs, and Dr. Sourav Majumdar from Serum Institute of India Pvt. Ltd. Various topics related to technology transfer guidelines, such as technology, patent filing guidelines, and cost calculation for technology transfer, were thoroughly discussed. An interactive panel discussion followed, allowing participants to delve deeper into the subject.



Group photo of the visiting dignitaries with the members of IASST

IASST Hosts Enlightening Lecture Series on Proteomics Day, Diving into Protein Dynamics

On the occasion of Proteomics Day on 18th March 2024, IASST hosted a captivating "Popular Lecture Series on Proteomics Day," shedding light on the fascinating realm of protein dynamics, distinguished speakers, Prof. Ashis Kr. Mukherjee, Director of IASST, and Prof. Timir Tripathi from the Department of Zoology at NEHU, Shillong, graced the event with their profound insights and expertise. Their engaging lectures captivated the audience, offering a deeper understanding of the structure-function properties of proteins and proteomics analysis. The event provided a platform for enthusiasts, researchers, and academicians to engage in meaningful discussions and forge new connections within the vibrant proteomics community.

Other Activities/ Events

IASST Promotes Women's Welfare and Safety Through Interactive Meetings of the Internal Complain Committee (ICC)

In a proactive move towards ensuring the welfare and safety of women within its campus,

on 21st April 2023, IASST convened an interactive meeting of the institute's Internal Complaints Committee (ICC), responsible for grievance redressal concerning sexual harassment. The meeting was chaired by Prof. Ashis K. Mukherjee, Director of IASST, and the chairperson of ICC, Dr. Arundhati Devi.

Key agenda items of the meeting included a comprehensive review of resolutions adopted in the most recent gathering and discussions on various critical issues pertinent to the well-being and empowerment of women within the institute.

During the meeting, Prof. Mukherjee emphasized the importance of proactive measures and suggested forming a women's welfare association within the institute. He also encouraged creating women's self-help groups to address issues collectively. Dr. A. Devi highlighted the significance of education on crucial subjects such as preventing early marriage and promoting female child education as part of broader initiatives aimed at empowering women. Such initiatives reflect the institute's broader commitment to promoting gender equality and ensuring the holistic

development of all its members.



Director, IASST and Head of ICC addressing the meet interacting with the women of the institute

Hindi Book "Vishadhar Bhujang Katha" Launch at DST Autonomous Institutes' Conclave

In a significant stride towards bridging the gap between mythological beliefs and scientific understanding, the official book release of "Vishadhar Bhujang Katha: From mythological belief to scientific approach" authored by Prof. Ashis K. Mukherjee, Director of IASST, took place at the DST Autonomous Institutes' Conclave 2023 on 9th May, 2023.

The inauguration ceremony, graced by esteemed dignitaries including Dr. M. Mohanty, Head of AI Division at DST, Prof. Giridhar Kulkarni from JNCASR Bengaluru, Prof. Umesh V Waghmare, President of Indian Academy of Sciences, Prof. Madhoolika Agarwal, General Secretary of National Academy of Science, and Prof. Indranil Manna, President of Indian National Academy of Engineering, witnessed the unveiling of this insightful Hindi book.

"Vishadhar Bhujang Katha" delves into the realm of venomous snakes in India, aiming to provide a comprehensive understanding from mythological and scientific perspectives. Prof.

Mukherjee's extensive 27 years of research in snake venom treatment and medical applications form the backbone of the book's content, offering readers a nuanced insight into this fascinating subject. The book launch signifies a significant contribution to scientific literature in Hindi, catering to a broader audience and promoting indigenous knowledge dissemination. It is a testament to Prof. Mukherjee's dedication and expertise in the domain, showcasing his commitment to bridging cultural narratives with scientific inquiry.



The book release ceremony in presence of the esteemed dignitaries

IASST Honors Nobel Laureate Dr. Dorothy C. Hodgkin on Birth Anniversary

On 12th May 2023, IASST paid homage to the illustrious Nobel laureate, Dr. Dorothy Mary Crowfoot Hodgkin, on her birth anniversary. A heartfelt floral tribute marked the occasion as the IASST fraternity came together to celebrate the enduring legacy of the renowned British scientist.

Born on May 12th, 1910, Dr. Dorothy C. Hodgkin was a trailblazing figure in the field of science, mainly known for her pioneering contributions to X-ray crystallography. Her ground-breaking work earned her the

prestigious Nobel Prize in Chemistry in 1964, cementing her place in history as a visionary scientist. Addressing the gathering, Prof. A. K. Mukherjee, Director of IASST, underscored the importance of drawing inspiration from Dr. Hodgkin's exemplary achievements, particularly highlighting her role as a pioneering woman scientist. Prof. Mukherjee emphasized the significance of empowerment across all segments of society, echoing Dr. Hodgkin's commitment to excellence and innovation.



A moment from the speech by the Director of IASST

IASST Hosts Orientation Programme for Newly Joined Research Scholars and Post-Doctoral Fellows

IASST organized a comprehensive orientation programme on 21st August, 2023, to facilitate the smooth integration of newly joined research scholars and post-doctoral fellows into the institute's academic and research environment.



Group photograph on the occasion of the Orientation Programme at IASST

Inauguration of 33/0.433 KV substation at IASST Campus

The Hon'ble Director, IASST inaugurated the 33/0.433 KV substation on 20th June 2023 in the presence of the faculty members, scientists, staff, and research scholars of IASST. The substation is anticipated to bear the potential to fulfill the institute's ongoing and future electricity needs.



Inauguration of the substation at IASST Campus by Prof. Ashis K. Mukherjee, Director, IASST

The orientation programme served as a platform to provide essential information and guidance to the recently joined students and fellows enrolled between June 2023 and August 2023. The event witnessed enthusiastic participation from institutional JRFs, AcSIR PhD students, post-doctoral fellows, IASST faculties, heads of departments, and administrative staff.

IASST Joins Nation in Celebrating Chandrayaan 3's Successful Moon Landing

On 23rd August, 2023, IASST joined the nation to witness a historic moment in India's space exploration journey - the successful landing of Lander "Vikram" as part of the Chandrayaan 3 mission on the moon's south pole.

The event's live streaming at IASST was met with jubilation and pride as the nation celebrated this monumental achievement. The successful landing of Chandrayaan 3 is a testament to India's scientific prowess and technological advancement in space exploration.

IASST Commemorates Gandhi Jayanti with Tribute to Mahatma Gandhi

On 2nd October 2023, IASST paid homage to the revered Mahatma Gandhi on the occasion of Gandhi Jayanti. The Hon'ble Director, Registrar, distinguished faculty members, and staff gathered to celebrate the life and legacy of the great leader, fondly known as the father of the nation in India.

The solemn ceremony began with floral tributes offered to Mahatma Gandhi, symbolizing reverence and admiration for his profound contributions to India's freedom. Following the floral tributes, the members of IASST took a solemn pledge to uphold the principles championed by Mahatma Gandhi, reaffirming their commitment to fostering harmony, compassion, and non-violence in their personal and professional lives.

IASST Marks World Animal Day with Compassionate Initiatives

IASST observed World Animal Day on 4th October 2023 with a compassionate and proactive approach by hosting an in-house dog vaccination drive. This initiative underscores

IASST's unwavering dedication to animals' welfare and ethical treatment.

To promote animal welfare, IASST has initiated various endeavors, including anti-rabies vaccination drives, medical care for dogs, the installation of sparrow feeders in and around the campus, and the creation of a pond to accommodate a diverse range of fish species. These endeavours are a collective effort led by Prof. Ashis Kr. Mukherjee, Director of IASST, and members of the IASST community who are united in their commitment to serving and caring for animals.

Tribute to Sir Chandrasekhara Venkata Raman on 125th birth anniversary

IASST celebrated the 135th birth anniversary of Sir Chandrasekhara Venkata Raman on 7th November 2023, the remarkable physicist whose 'Raman Effect' continues to illuminate the path of scientific discovery. Sir Chandrasekhara Venkata Raman's contributions to the world of science shine as brightly as ever, inspiring generations to explore the wonders of the universe. His ground-breaking achievements significantly propelled the growth of science in India as he was honored with the Nobel Prize for Physics in 1930, becoming the first Asian scientist to receive this prestigious accolade. IASST, as a leading R&D institution, holds Sir C.V. Raman's ideals in great reverence.

Inauguration of New Grocery Store cum Canteen

Prof. Ashis K. Mukherjee, Director of IASST, officiated the inaugural ceremony for the newly constructed Grocery Store cum Canteen at the IASST campus on 15th November 2023. Addressing the gathering, Prof. Mukherjee emphasized the imperative role of IASST in meeting the resident needs of the dedicated research scholars and esteemed staff members of IASST. The Grocery Store cum Canteen is

poised to become a central hub catering not only to the immediate community but also extending

its services to fulfill the broader needs of the IASST community and beyond.



A moment from the inauguration ceremony of the newly constructed Grocery Store cum Canteen

Fostering Open Dialogue, IASST's Proactive Stride to Curb Sexual Harassment at Workplace

In alignment with the ongoing Sexual Harassment at Workplace Prevention Week initiated by the Ministry of Women and Child Development, the Internal Complaints Committee (ICC) of IASST organized a comprehensive awareness and sensitization workshop on 08th December 2023. The event aimed to address the critical issue of preventing sexual harassment within the workplace.

The workshop commenced with an engaging session led by Prof. Arundhati Devi,

Chairperson of the ICC, who set the tone for the discussions. Professor Ashish Kr. Mukherjee, Director of IASST, delivered an insightful invited address, highlighting the essential ICC mandates for protection against sexual harassment within the institute. Their insightful comments highlighted the ongoing initiatives and future strategies that IASST is implementing to ensure the ICC's continued effectiveness in preventing and addressing incidents of sexual harassment.

The centerpiece of the workshop was an engaging panel discussion that highlighted various insights related to sexual harassment in the workplace.



Hon'ble Director, Hon'ble Registrar, IASST and members of the ICC interacting with the audience

Display of Exhibits of IASST in National Exhibitions

Exploring Science: IASST at the 9th India International Science Festival

Demonstrating remarkable advancements in science and innovation, IASST participated in the prestigious 9th India International Science Festival (IISF) from 17th to 20th January, 2024, in Faridabad, Haryana. This vibrant event, a collaboration between several government ministries and Vijnan Bharati, celebrated India's achievements in science, technology, and innovation. Prof. Ashis K. Mukherjee, Director of IASST, along with his team of scientists, showcased the institute's commitment to advancing scientific knowledge and highlighted the importance of scientific exploration and innovation in shaping India's future. As part of the celebrations, IASST also organized an outreach program on 31st December, 2023, for school students, providing them with an opportunity to explore the sophisticated laboratories at IASST.



Prof. Ashis Kr. Mukherjee with IASST team at IISF 2023



Dr. S. Somnath, ISRO Chairman visited the IASST pavilion at IISF



Prof. Abhay Karandikar, DST Secretary visiting the stall of IASST Guwahati at IISF 2023

IASST Participates at Innovation Festival 2024: A Celebration of Scientific Ingenuity

Participating in one of the exciting festivals organized by the National Council of Science Museums in collaboration with the National Innovation Foundation-DST, Govt. of India, IASST took part in the "Innovation Festival" held at the Regional Science Centre, Khanapara

on 22nd & 23rd February 2024.

Amidst a flurry of inventive displays and captivating demonstrations, the IASST team showcased a diverse array of ground-breaking pursuits, captivating visitors of all ages and

backgrounds. Their dedication to showcasing the remarkable products crafted by the start-up incubatees of BioNEST-IASST was particularly noteworthy, shedding light on the transformative potential of scientific entrepreneurship.



Glimpses of BioNEST-IASST's participation at Innovation Festival 2024



School outreach programme at IASST



Students exploring Labs and BioNEST incubation centre at IASST

Superannuation and Farewell of Employees

Farewell of Prof. Rajlakshmi Devi 	On 31st July 2023, a farewell meeting was organized to bid farewell to Prof. Rajlakshmi Devi, Professor, Life Sciences Division. In their speeches, the faculty members and research scholars appreciated Prof. Devi's contribution to the institute and wished her good health and a prosperous life.
Farewell of Mr. Prabhat Barma 	On 31st July 2023, a farewell meeting was organized to bid farewell to Mr. Prabhat Barma, Assistant,. In their speeches, the faculty and staff members appreciated Mr. Barma's contribution to the institute and wished him good health and a prosperous life.
Farewell of Mr. Tarun Talukdar 	On 29th February 2024, a farewell meeting was organized to bid farewell to Mr. Tarun Talukdar, Multi-tasking Staff (MTS), IASST because of his superannuation. In their speeches, the faculty and staff members appreciated Mr. Talukdar's contribution to the institute and wished him good health and a prosperous life.

Workshop/Training, etc.

Exploring Frontiers: Teacher Training Programme at IASST Unveils Cutting-Edge Research

IASST hosted a Teacher Training Programme, offering educators an immersive experience at the forefront of scientific research. Throughout 24th and 25th May 2023, Associate Prof. Dr. A.R. Pal, Prof. Devasish Choudhury, and Prof. Mojibur R. Khan, esteemed faculty members of IASST, delivered informative sessions that provided deep insights into the ground-breaking research endeavours conducted within the institution.

The programme featured an array of informative talk sessions, where attendees gained invaluable knowledge from seasoned experts in their respective fields. With access to 15 cutting-edge laboratories, attendees were treated to live demonstrations and hands-on experiences with state-of-the-art scientific instruments. These sessions were meticulously designed to not only showcase various ongoing research projects but also to familiarize participants with the advanced equipment utilized in these endeavours.



Quarterly Hindi Workshop Boosts Language Implementation at IASST

Under the mandate of the Official Language Implementation Policy of the Government of India, IASST successfully conducted its quarterly Hindi workshop on 30th

June 2023. This workshop, dedicated to the April-June 2023-24 quarter, aimed to bolster the usage of Hindi in official communications in adherence to government directives.

A total of 14 faculty members and officers actively participated in the workshop, reflecting the institute's commitment to fostering linguistic diversity and compliance with official language policies. Mrs. Nirmali Devi, Hindi Assistant at IASST, provided training on Hindi typing while utilizing the e-office for noting purposes, aiming to enhance the percentage of noting as required under the Official Language implementation policy of the Government of India.

Training in the Production of Fermented Food and Beverages

IASST hosted an enlightening training workshop from 10th to 14th July 2023, organized by the DBT Advanced Level Institutional Biotech Hub. This comprehensive workshop delved into the intricate art and science behind the production of fermented foods and beverages.

Distinguished guest speakers, including Prof. Madhumita Barooah from the Department of Agricultural Biotechnology at Assam Agricultural University, Dr. Wahengbam Romi from CSIR NEIST, and Dr. Sushmita Das, Assistant Professor at Gauhati University, graced the event with their expertise. Additionally, Director Prof. Ashis Kumar Mukherjee and Prof. Mojibur R. Khan delivered insightful speeches, further enriching the learning experience.

Participants had the unique opportunity to hone their skills through practical training in preparing various fermented delights, including fermented rice, bamboo shoots, and black rice beverages. Moreover, they were introduced to cutting-edge molecular biology techniques.

Celebrating Hindi Pakhwada: Promoting Linguistic Unity and Cultural Heritage

The Hindi Pakhwada celebration, spanning from 20th to 29th September, 2023, a vibrant tribute to the language that serves as a bridge between diverse communities and cultures across the nation. Representing IASST, Mrs. Nirmali Devi, Hindi Assistant, at IASST was present at the the 3rd All India Official Language Conference at the Shree Shiv Chhatrapati Sports Complex on 14th September 2023.

The festivities continued with a series of engaging programs and competitions as part of the Hindi pakhwada celebration. Notable events included noting/drafting competitions for staff and essay writing competitions for IASST scholars, fostering a spirit of linguistic excellence and creativity within the institute's premises.

Online Training on Wiley Resources

A collaborative effort between the National Knowledge Resources Consortium (NKRC) and Wiley Publishers resulted in a dynamic training program titled "Wiley Open Access: Current Trends & the Way Forward," held on 1st November, 2023. This initiative, part of NKRC's "One Month One Lecture on e-resource" campaign, aimed to empower faculty and research scholars of IASST with valuable insights into the realm of open-access publishing.

The session was led by Mr. Fabio Di Bello, Customer Training Manager at Wiley Publishing House, and provided a comprehensive overview of Wiley's open-access platform. Participants delved into topics such as the fundamentals of open access, its inherent benefits, and practical guidance on submitting papers to open-access journals hosted by Wiley.

Exploring Microbial Dynamics: 5-Day Faculty Improvement Training at IASST

The 5-day Faculty Improvement training programme on "Study on Microbial Dynamics during Fermentation of Ethnic Foods and Beverages" organized by Advanced Level Biotech Hub at IASST started on 29th January till 2nd February 2024. Emphasizing the significance of these training programs, Prof. Ashis K. Mukherjee, Director of IASST, urged the participants to explore and comprehend the dynamics of ever-changing microbial processes in biotechnology. Welcoming the faculties of several institutions, Prof. Mojibur R. Khan, Project Investigator (PI) of the project, led a detailed overview of this training program, featuring exclusive lecture sessions by experts and hands-on training.

The training programme featured Prof. Manabendra Mandal from Tezpur University, Dr. Kumaraswamy Jeyaram, Scientist E, Microbial Resources, Dept. of IBSD, Imphal, Prof. Mojibur R. Khan, and Dr. M. Joyraj Bhattacharya, who presented lectures on the occasion. An exclusive hands-on training session on "Isolation and Enumeration from Food Samples" was also demonstrated by Dr. Khomdram N. Singh, Project Associate, and Mr. Shantanu Das, Senior Research Associate at IASST. The engaging sessions were attended by enthusiastic participants from all across the country.

Hindi Quarterly Workshop

On 26th March 2024, IASST organized the quarterly Hindi workshop for January- March 2023-24. Prof. Ashish Kumar Mukherjee, Director of IASST, urged the employees of IASST on various points related to enhancing the implementation of Hindi, and the institute's Hindi assistant gave training related to Hindi typing. A total of 10 faculty members of the institute and four administrative and technical officers participated in the workshop.

IASST MEDIA REACH

S. No.	The topic of the Programme	Name of the newspaper/ web news portal, etc.	Date of Publication
1.	Dr. Joyanti Chutia gets awarded Sati Sadhini Award	Asomiya Pratidin	21 st April 2023
2.	Dr. Joyanti Chutia gets awarded Assam government's "Sati Sadhini Awarded"	Amar Asom	21 st April 2023
3.	53 rd foundation day of DST observed “Investments in R&D not driven by profits alone”	The Assam Tribune	04 th May 2023
4.	DST Autonomous Institutes Conclave to be held on May 9-10	The Assam Tribune	05 th May 2023
5.	National Science & technology institutes meet at Guwahati	Amar Asom	05 th May 2023
6.	Science and technology national research institutes meet at IASST	Purbanchal Prahari	05 th May 2023
7.	IASST Guwahati gets DST, AI 2023'S hosting	Viksit Bharat Samachar	06 th May 2023
8.	National Science and Technology research institute's directors meet at IASST	Dainik Batori Kakat	07 th May 2023
9.	Ph. D conferred to Mrs. Elima Hussain	The Assam Tribune	09 th May 2023
10.	National Science and Research institutes Directors meet	Dainik Janambhumi	09 th May 2023
11.	National Science and Research institutes Directors meet	DD News Assam	09 th May 2023
12.	At Paschim Boragaon of Guwahati	Assam Aditya	10 th May 2023
13.	National Science and research institute's heads meet	Dainik Asom	10 th May 2023
14.	National science research institutes' heads meet at IASST's initiative	Dainik Janambhumi	11 th May 2023
15.	National science and research institutes' heads meet on IASST's initiation	Purbanchal Prahari	11 th May 2023

16.	National Science and Research Institute's heads meet started	Asomiya Khabar	11 th May 2023
17.	IASST's national science and research institute's heads two-day meeting	Purbanchal Prahari	12 th May 2023
18.	IASST's initiation: national science-research institutes heads meet	Asomiya Pratidin	12 th May 2023
19.	Book on snakes in Hindi released	The Assam Tribune	12 th May 2023
20.	National science research institutes' meet at IASST	Niyomiya Barta	12 th May 2023
21.	DST AI conclave May 9 th -10 th Press release	Asom Aditya	13 th May 2023
22.	DST AI conclave May 9 th -10 th Press release	Dainik Batori Kakot	13 th May 2023
23.	Ph. D conferred to Ms. Anjana Begum	The Assam Tribune	31 st May 2023
24.	Ph. D conferred to Mrs. Kabyashree Phukan	The Assam Tribune	06 th June 2023
25.	Ph. D conferred to Mrs. Kabyashree Phukan	Assomiya Pratidin	06 th June 2023
26.	Call for region-Specific anti-venoms	The Times of India	12 th June 2023
27.	Dr. Rajlakshmi Devi expresses concern over vanishing painting artistry in Assam	Dainik Assam	12 th June 2023
28.	Study highlights alarming scale of snakebite crisis in Assam	The Assam Tribune	14 th June 2023
29.	Dr. Ramesh Chandra Deka delivered his lecture at IASST	Amar Asom	10 th July 2023
30.	Ph. D conferred to Mrs. Paramita Choudhury	The Assam Tribune	13 th July 2023
31.	Training on production of fermented food, beverages	The Assam Tribune	18 th July 2023
32.	5 days' workshop on production of fermented food, beverages	Viksit Bharat Samachar	19 th July 2023

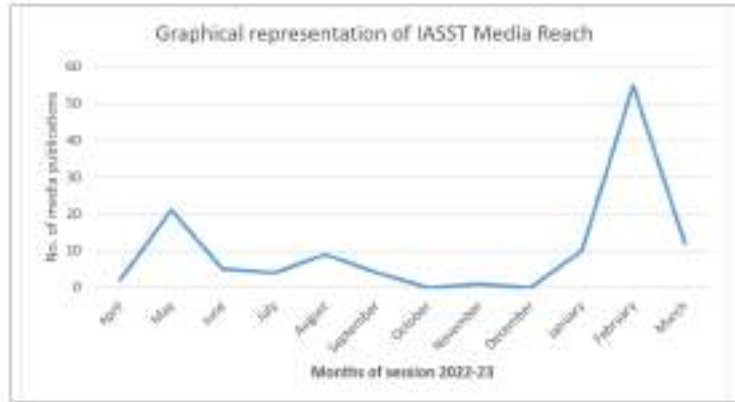
33.	National Librarians day organized at IASST	Dainik Janambhumi	09 th August 2023
34.	National Librarians day at IASST	Dainandin Barta	10 th August 2023
35.	National Librarians' day at IASST	DD News Assamese	11 th August 2023
36.	National Librarians day	Amar Asom	16 th August 2023
37.	National Librarians day at Boragaon	Niyomiya Barta	16 th August 2023
38.	Homage paid to Dr. SR Ranganathan	The Assam Tribune	16 th August 2023
39.	National Librarians day celebrate at IASST	Dainik Janambhumi	17 th August 2023
40.	IASST celebrates National Librarians' Day with captivating talk show	The North East Times	22 nd August 2023
41.	IASST celebrates National Librarians' Day with captivating talk show	The Meghalaya Guardian	22 nd August 2023
42.	Study throws new light on spread of covid delta variant	Amar Asom	12 th September 2023
43.	Ph. D conferred to Mrs. Chandana Malakar	Amar Asom	12 th September 2023
44.	Ph. D conferred to Mrs. Chandana Malakar	The Assam Tribune	12 th September 2023
45.	Team of entomologists rushed to Assam's dengue-hit Karbi Anglong	The Times of India	13 th September 2023
46.	Ph. D conferred to Ms. Paramita Chakravarty	The Assam Tribune	10 th November 2023
47.	Soyabean cultivation starts in Assam	Purbanchal Prahari	09 th January 2024
48.	Soyabean cultivation started in Assam, new hope for village unemployed	Viksit Bharat Samachar	09 th January 2024
49.	IASST takes steps for soyabean cultivation for SC- ST community	Dainik Agradut	11 th January 2024
50.	IASST takes steps for soyabean cultivation for SC- ST community	Dainik Batorikakat	12 th January 2024
51.	IASST takes steps for soyabean cultivation	Asom Aditya	13 th January 2024

52.	IASST Guwahati launches project to grow soybeans	The Assam Tribune	17 th January 2024
53.	IASST takes innovative step in soyabean cultivation	Dainik Asom	19 th January 2024
54.	IASST Guwahati takes steps to make the farmer self- dependent in soyabean cultivation	Amar Asom	21 st January 2024
55.	Celebrating 75th Republic Day, IASST Shines Spotlight on Women Empowerment	The Assam Tribune	29 th January 2024
56.	IASST celebrates 75 th R-Day wit spotlight on women empowerment	The Meghalaya Guardian	29 th January 2024
57.	Guwahati IASST hosts faculty training program	The Hills Times	07 th February 2024
58.	International snake symposium on venom pharmacology snake symposium to be hosted by IASST guwahati	Purbanchal Prahari	07 th February 2024
59.	International meet organized at IASST guwahati	Asomiya Pratidin	07 th February 2024
60.	Teacher's training workshop	Niyomiya Barta	07 th February 2024
61.	International snake venom meet to be organized at IASST	Niyomiya Barta	07 th February 2024
62.	Teacher's training program ends at IASST	Amar Asom	07 th February 2024
63.	International meet on snake venom treatment at IASST Guwahati	Amar Asom	07 th February 2024
64.	International meet on snake venom treatment at IASST Guwahati	Dainik Asom	07 th February 2024
65.	International meet on snake venom treatment at IASST Guwahati	NE News Live	07 th February 2024
66.	International meet on snake venom treatment at IASST Guwahati	DD News Assamese	07 th February 2024
67.	International meet on snake venom treatment at IASST Guwahati	NE News Live	07 th February 2024
68.	International meet on snake venom treatment at IASST Guwahati	Nation Live Daily Axom	07 th February 2024

69.	International meet on snake venom treatment at IASST Guwahati	Amrit News	08 th February 2024
70.	International meet on snake venom treatment at IASST Guwahati	Sangbad Lahar	08 th February 2024
71.	CME on snakebite incidents from today	The Assam Tribune	08 th February 2024
72.	International meet on snake venom medical science and its invention and medical implications	Dainik Batori Kakat	08 th February 2024
73.	International meet on snake venom treatment at IASST Guwahati	Ishan News Digital	08 th February 2024
74.	International meet on snake venom treatment at IASST Guwahati	Sangbad Lahar	08 th February 2024
75.	IASST Guwahati hosting Int'l symposium "Snakesymo-2024" on venom pharmacology and drug discovery	The Meghalaya Gurdian	08 th February 2024
76.	International meet on snake venom medical science and its invention and medical implications	Time Plus24	08 th February 2024
77.	International meet on snake venom medical science and its invention and medical implications	Nation Live Daily Axom	08 th February 2024
78.	IASST organized a three-day seminar to educate the public on snake bite control and treatment methods	Sangbad Northeast	09 th February 2024
79.	Symposium, three day international seminar at IASST	Amrit News	09 th February 2024
80.	IASST host a "Continuous Medical Education (CME)" session and a two-day International symposium titled "SnakeSymp-2024".	NE News Live	09 th February 2024
81.	Guwahati IASST spearheads innovative approach to snakebite management	The Hills Times	09 th February 2024
82.	Ground-Breaking CME session addresses snakebite magt challenges	The North East Times	09 th February 2024
83.	Ground-Breaking CME session addresses snakebite magt challenges	The Meghalaya Gurdian	09 th February 2024

84.	Teacher's training program ends at IASST Guwahati	Dainik Batori Kakot	09 th February 2024
85.	International meet at IASST	Dainik Janambhumi	09 th February 2024
86.	IASST holds pioneering CME on snakebite challenges	Arunachal Observer	09 th February 2024
87.	CME session on snakebite magmt challenges concludes	The North East Times	11 th February 2024
88.	CME session on snakebite magmt challenges concludes	The Meghalaya Gurdian	11 th February 2024
89.	International meet at IASST	Assomiya Pratidin	11 th February 2024
90.	3-day international meet ends at IASST	Amar Asom	11 th February 2024
91.	International meetings in CME and Snake- Sympo 2024 at IASST ends	Dainadin Barta	11 th February 2024
92.	Meetings on CME and Snake Symp 2024 at IASST ends	Dainik Batori Kakot	11 th February 2024
93.	IASST hosts CME on treating snakebite cases	The Assam Tribune	16 th February 2024
94.	Smoke coming out of dumping ground near Deepor Bill has created fearful conditions	Amar Asom	18 th February 2024
95.	National Science Day to be organized at IASST	Dainik Janambhumi	25 th February 2024
96.	National Science Day to be organized at IASST	Dainik Janambhumi	26 th February 2024
97.	IASST to honor Dr. C.V Raman on National Science Day	The Meghalaya Guardian	26 th February 2024
98.	IASST to honor Dr. C.V Raman on National Science Day	The North East Times	26 th February 2024
99.	Preparation for National Science Day at IASST Guwahati	Purbanchal Prahari	27 th February 2024
100.	Science Day organized	Dainik Asom	28 th February 2024
101.	National Science Day organized at IASST	Dainik Batori Kakot	28 th February 2024
102.	IASST to host conclave on tech transfer	The Assam Tribune	28 th February 2024

103.	Technology transfer initiative, teachers' conclave	Dainik Janambhumi	28 th February 2024
104.	Tech transfer conclave at IASST	Niyamiya Barta	28 th February 2024
105.	National Science Day celebrate at IASST	Niyamiya Barta	29 th February 2024
106.	National Science Day celebrate at IASST	NE News Live	29 th February 2024
107.	National Science Day celebrate at IASST	Amrit News	29 th February 2024
108.	National Science Day celebrated at IASST	Dainik Agradut	29 th February 2024
109.	Technology transfer initiative educational conclave at IASST	Dainik Agradut	29 th February 2024
110.	National Science Day at science & technology higher education institute	Dainik Janambhumi	29 th February 2024
111.	National Science Day celebrated	Dainik Asom	29 th February 2024
112.	Technology transfer conclave and teaching initiative at IASST	Dainik Batori Kakot	04 th March 2024
113.	National Science Day celebrated AT IASST	Asom Aditya	04 th March 2024
114.	National Science Day celebrated AT IASST	Headline 8	04 th March 2024
115.	Industrial and Academic Conference on Technology Transfer at IASST	Amrit News	04 th March 2024
116.	IASST Guwahati Hosts Industry-Academia Conclave	The Guwahati: True & Honest	04 th March 2024
117.	Industrial & educational conclave in guwahati	Amar Asom	04 th March 2024
118.	Technology transfer industrial & educational conclave	Dainik Agradoot	04 th March 2024
119.	Industrial educational conclave ends	Dainik Janambhumi	04 th March 2024
120.	IASST Guwahati organizes Industry-Academia conclave on tech transfer	The North East Times	05 th March 2024
121.	IASST Guwahati organises industry-academia conclave on technology transfer	The Meghalaya Guardian	05 th March 2024
122.	Technology transfer industrial & educational conclave	DD News Assamese	05 th March 2024
123.	NE start-up & entrepreneurs conclave begins	The Assam Tribune	28 th March 2024



আই এ এছ এছ টিৰ ৰাষ্ট্ৰীয় বিজ্ঞান দিবস উদ্‌যাপন

গুৱাহাটী, ৩ মাৰ্চ : পশ্চিম গুৱাহাটীৰ বৰাগাঁওস্থিত বিজ্ঞান আৰু প্ৰযুক্তিৰ উচ্চ অধ্যয়ন প্ৰতিষ্ঠান চমুকৈ 'আই এ এছ এছ টি' চৌহদত বিগত বছৰৰ দৰে এইবৈশিষ্ট সোমবাৰে ৰাষ্ট্ৰীয় বিজ্ঞান দিবস উদ্‌যাপন কৰা হয়। প্ৰতিষ্ঠান চৌহদত থকা 'ভাৰতৰ নোবেল বঁটা বিজয়ী' বিজ্ঞানী জাৰ্জ টি ভি বৰমানৰ প্ৰতিমূৰ্ত্তিত পুষ্পাঞ্জলি জনাবলৈ কাৰ্যসূচীৰ শুভাৰম্ভ কৰে আই এ এছ এছ টিৰ সঞ্চালক অধ্যাপক আশিস কুমাৰ মুখাৰ্জীয়ে। অনন্যাত্মক এই উপলক্ষে অনুষ্ঠিত চমু অনুষ্ঠানত 'ভাৰতৰ সৰ্বশ্ৰেষ্ঠ অধ্যাপক' মুখাৰ্জীয়ে ৰাষ্ট্ৰীয় বিজ্ঞান দিবস উদ্‌যাপনৰ তাৎপৰ্য দাঙি ধৰি এইবোৰৰ বিজ্ঞান দিবসৰ মূল বাণী "Integrated Approach in S & T Sustainable Future" সম্পৰ্কেও ব্যক্ত কৰে। তেনেদৰে দিবসৰ লগত সংগতি ৰাখি 'অনুষ্ঠিত সভাত নিমন্ত্ৰিত অতিথি হিচাপে তেজপুৰ বিশ্ববিদ্যালয়ৰ বসন্তান বিজ্ঞান বিভাগৰ অধ্যাপক নাচৰিন এছ ইছলাম আৰু গণিত বিজ্ঞান বিভাগৰ অধ্যাপক নাচনবীপ ডেকা বৰুৱা উপস্থিত থাকি বিজ্ঞান দিবসৰ মূল বাণীৰ ওপৰত ব্যাখ্যা আগবঢ়ায়। ইয়াৰ উপৰিও দিবসৰ লগত সংগতি ৰাখি বিজ্ঞান বিষয়ক কুইজ আৰু পোষ্টাৰ প্ৰতিযোগিতা অনুষ্ঠিত হয়। তেনেদৰে জাৰ্জীৰ পত্ৰিকা উন্মোচন কৰা হয়। বিৱিধ অনুষ্ঠিত সামৰণি অনুষ্ঠানত বিজয়ী প্ৰতিযোগীসকলক বঁটা বিতৰণ কৰে সঞ্চালক অধ্যাপক আশিস কুমাৰ মুখাৰ্জীয়ে। অনন্যাত্মক কাৰ্যসূচীত ব্যৱহাৰ বিভিন্ন প্ৰাপ্তৰ শিক্ষানুষ্ঠানৰ নৱম আৰু দশম শ্ৰেণীৰ প্ৰায় ৪০০ গৰাকী ছাত্ৰ - ছাত্ৰী উপস্থিত থাকে।

'National Science Day Celebrated at IASST', published in Dainik Batori Kakot on 28th February 2024



'Industrial, educational conclave ends at IASST', published in Dainik Janambhumi 04th March 2024

FINANCIAL STATEMENTS





BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
FRN - 327864E

Head Office - 405, 4th Floor, Narbade Building
Near Parmeshwar Building, Chakbar
Guwahati - 781007 (Assam)
Contact : 0361-2734715, +91 9854624715
E-mail : cabijayagarwal1@gmail.com
bacchert@gmail.com

INDEPENDENT AUDITOR'S REPORT

**TO
THE MEMBERS
THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
GUWAHATI**

We have audited the accompanying Financial Statements of **The Institute of Advanced Study in Science & Technology, Paschim Boragaon, Garchuk, Guwahati** which comprise the Consolidated Balance Sheet as at 31st March, 2024, the Consolidated Receipts and Payments Account and the Consolidated Income and Expenditure Account for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for Financial Statements:

- Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position and financial performance of the society in accordance with the Accounting Standards generally accepted in India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from misstatement, whether due to error or fraud.

Auditor's Responsibility:

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those standards require that we comply with ethical requirements and plans and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

- An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the society's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

- We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.


Chartered Accountant
IAS-ET, Paschim Boragaon
Guwahati - 781007
Bijay Agarwal & Co. Chartered Accountants




Director
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-781007


Cond. P/2
Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781007



BIJAY AGARWAL & CO.

CHARTERED ACCOUNTANTS

FRN - 327864E

Head Office - 405, 4th Floor, Narmada Building
New Purnameswar Building, Chateau
Guwahati - 781001 (Assam)
Contact - 0361-2734715, +91 9864624715
E-mail - bijayagarwal1@gmail.com
baccdent@gmail.com

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Opinion:

In our opinion and to the best of our information and according to the explanations given to us, the financial statements give the information required by the Act in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India :

- (a) In the case of the Balance Sheet, of the state of affairs of the Society, as on 31st March, 2024;
- (b) In case of the Income and Expenditure Account of the Income/Expenditure of Society for the year ended 31st March, 2024;
- (c) In case of the Receipts and Payment Account of the Receipts/Payments of Society for the year ended 31st March, 2024;

We further report that:

- (a) We have obtained all the information and explanations to the best of our knowledge and belief were necessary for the purpose of our audit;
- (b) In our opinion, proper books of account, as required by law have been kept by the Society so far as appears from our examination of those books;
- (c) The Balance Sheet, the Receipts and Payments Account and the Income and Expenditure Account dealt with by this Report are in agreement with the books of account.

UDIN : 24318728BKESEM6423
Place : Guwahati
Date : 25-06-2024

For Bijay Agarwal & Co.
Chartered Accountants
FRN : 327864E



Partner
Membership No.318728


निदेशक / Director
आई.एस.टी. एम.टी. प्रौद्योगिकी संस्थान
IASST, Paschim Boragaon
गुवाहाटी-781005, असम, भारत
Guwahati-781005 Assam India


निदेशक / Director
आई.एस.टी. एम.टी. प्रौद्योगिकी संस्थान
IASST, Paschim Boragaon, Guwahati-781005


Finance & Accounts Officer
IASST Paschim Boragaon
Guwahati-781005

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED BALANCE SHEET AS ON 31ST MARCH, 2024

PARTICULARS	Schedule	Amount (₹) 2023-24
CAPITAL FUND & LIABILITIES		
Capital Fund/Corpus Fund	1	91,91,72,350.45
Reserve & Surplus	2	26,172.00
Earmarked Funds	3	4,26,87,910.24
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	16,98,94,420.38
TOTAL :		1,13,17,80,853.07
ASSETS		
Fixed Assets	8	84,05,57,709.66
Investments - From Earmarked/Endowment Funds	9	0.00
Investments - Others	10	9,91,23,277.56
Current Assets, Loans and Advances	11	19,20,99,866.87
TOTAL :		1,13,17,80,853.07
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOU	25	

In terms of our report of even date annexed hereto.

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)

Partner

Membership No. 318728

Place : Guwahati

Date : 25-06-2024

UDIN : 24319728BKESM6422


Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2024

PARTICULARS	Schedule	Amount (₹) 2023-24
INCOME		
Income from Sales/Services	12	0.00
Grant/Subsidies	13	28,02,56,842.00
Fees/Subscriptions	14	0.00
Income from Investments (Income on Invest. From earmarked/endow. Funds transferred to Funds)	15	0.00
Income from Royalty, Publication, etc.	16	0.00
Interest earned	17	75,27,357.00
Other Income	18	1,58,51,143.96
Increase/(decrease) in stock of Finished goods and work-in-progress	19	0.00
TOTAL (A) :		36,36,35,342.96
EXPENDITURE		
Establishment Expenses	20	12,66,87,766.00
Other Administrative Expenses, etc.	21	13,48,27,899.34
Expenditure on Grants, Subsidies, etc.	22	-
Interest	23	0.00
TOTAL (B) :		26,15,15,665.34
Balance being excess of Income over Expenditure (A-B)		4,21,19,677.62
Transfer to / from General Reserve		0.00
BALANCE BEING SURPLUS/(DEFICT) CARRIED TO CORPUS/CAPITAL FUND		4,21,19,677.62

Significant Accounting Policies
Contingent Liabilities and Notes to Accounts

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)
Partner
Membership No. 318728
Place : Guwahati
Date : 25-06-2024
UDIN : 24119718BKE6EM6423



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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BANGALAHALLI-700033

= EARMARKED FUNDS :-

SCHEDULE - 3)

Particulars	Salary	Contingency	Travel	Consumables	Training	Overhead	Misc.	Meeting & Travelling	Research & Fellow	Consultancy Fees	Contractual	Bank Interest	Refund Against Advances (Receipt)	Refund	Total
a) Opening Balance	2,32,89,850	9,76,712	4,46,233	35,56,500	96,497	-30,31,152	25,70,378	-1,07,887	-1,27,893	3,25,906	-2,30,000	1,33,74,146	0	0	4,23,80,995
b) Addition to the Funds															
i) Grants	1,76,58,352	25,06,633	18,19,011	1,81,87,400	0	10,33,255	0	0	0	0	0	0	0	0	4,33,94,920
ii) Reassignment from i)	883,425	54,430	30,71,648	3,77,856	4,92,129	0,000	-4,69,719	0	0	0	0	0	-25,446	0	1,37,75,14,000
iii) Other Receipts	2,46,73,799	36,52,960	88,92,194	2,19,61,267	4,92,129	10,33,255	-4,69,719	0	0	0	0	28,12,790	0	0	28,12,790
TOTAL (a+b)	4,77,44,300	48,31,662	33,41,432	2,53,17,778	5,92,626	-4,76,897	18,71,479	-1,07,887	-1,27,893	3,25,906	-2,30,000	1,61,86,936	-2,30,446	0	5,77,86,524
c) Payment towards objectives of Funds	2,22,93,979	18,19,265	9,66,009	2,08,20,541	4,16,982	11,30,143	-5,56,779	0	0	0	0	0	1,52,010	0	4,49,48,573
d) Advances															
PT Advance Against	0	29,360	0	2,08,196	0	8,000	0	0	0	0	0	0	0	0	2,46,806
CT Advance Given	14,05,800	37,400	25,000	66,010	56,000	0	0	0	0	0	0	0	0	0	15,00,410
Interest Refund	0	0	0	0	0	0	0	0	0	0	0	-2,485	0	0	2,485
TOTAL	14,05,800	37,400	25,000	66,010	56,000	-8,000	0	0	0	0	0	-2,485	0	0	14,08,119
e) Current Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PT Liability Against	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CT Liability Given	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
f) Expenditure towards objectives of Funds (a-d+e)	2,08,28,139	18,11,025	9,43,019	2,08,61,381	5,62,982	10,58,183	-5,56,779	0	0	0	0	2,485	1,51,010	0	4,55,88,404
g) Adjustment of Surplus	28,33,189	12,03,816	38,83,470	10,88,002	2,10,629	20,000	22,40,599	0	720	0	0	0	-3,80,459	-1,79,010	1,19,28,455
h) Net Balance as at the end (a+b-f+g)	2,40,29,074	10,90,112	51,0943.2	25,68,97.6	965.0	(2,05,079.8)	18,76,33.1	(1,07,887.8)	(1,28,43.8)	3,25,906.0	(2,30,000.0)	1,61,84,451.5	(5,000.0)	1,70,910.0	42,68,710.2



Finance Director
IASST, Paschim Bangalaha
Paschim Bangalaha, Guwahati-781025
Assam India

Head of Accounts
IASST, Paschim Bangalaha
Paschim Bangalaha, Guwahati-781025
Assam India

Finance & Accounts Officer
IASST, Paschim Bangalaha
Guwahati-781025

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY PASCHIM BORAGAON, GUWAHATI-781035			
CONSOLIDATED RECEIPTS & PAYMENTS ACCOUNT FOR THE YEAR ENDED 31st MARCH 2024			
RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
I Opening Balances:		I Expenses:	
a) Cash in hand	0.00	a) Establishment Expenses	
b) Bank Balances		Extramural Projects	3,22,90,999.00
i) In current accounts	0.00	ISI General Fund	1,74,99,492.00
ii) In deposit accounts	0.00	Miscellaneous & Others	0.00
iii) Savings accounts	2,37,38,077.30		18,97,92,491.00
	2,37,38,077.30		
II Grants Received		b) Administrative Expenses/ Expenses on Grant	
a) From Government of India		Extramural Projects	2,79,02,574.00
Capital Grant	9,45,27,489.00	ISI General Fund	14,96,26,800.00
Revenue Grant	13,04,90,920.00	Miscellaneous & Others	50,91,700.00
(A) per Annexure D)			18,02,88,070.35
III From State Government	0.00	II Payments made against funds for various projects	0.00
c) C.N.A. Reimbursement	0.00		
Capital Grant	13,72,285.00	III Investments and deposits made	
Revenue Grant	1,37,75,134.00	a) Out of Government/Endow. Funds	0.00
	14,09,99,419.00	b) Out of Own Funds	1,50,00,000.00
IV Employees Remuneration Fund	18,040.00	IV Expenditure on Fixed Assets & Capital WIP	
V Interest Received		a) Purchase of Fixed Assets	
a) On Bank deposits	11,24,922.28	Extramural Projects	33,88,454.00
b) Loans, Advances, etc.	0.00	ISI General Fund	9,58,19,290.36
	11,24,922.28	Miscellaneous & Others	0.00
V Other Income			43,46,744.36
Interest on Facility	47,80,243.07	b) Expenditure on Capital WIP	0.00
Salary/Services	4,88,270.02	V Refund of Surplus money/Loans	
SSU/ Guest House	60,39,312.00	a) To the Government of India	0.00
Security	6,568.00	b) To the State Government	0.00
Mess/ Dues	16,49,394.00	c) To other providers of Funds	0.00
Other Income	49,72,070.50	VI Finance charges (Interest)	
Extramural Project	31,61,540.00		
Earnest Money Deposit	5,30,634.00	VI Other Payments	
IASST Project Fund	32,536.66	a) Bank Charges	0.00
	2,25,18,313.26	b) Bank Interest refund	32,09,369.00
VI Amount Received	0.00	c) Fund refunded against completed projects (Grant) E	32,54,091.00
VII Any Other Receipts	0.00	d) CIA Refund through ISI	40,58,997.00
		e) Refund to C.N.A. as on 31.03.24	40,29,674.00
		f) Receivable from Extramural Project	1,00,256.00
			2,47,03,787.00
		* Closing Balances:	
		a) Cash in hand	0.00
		b) Bank Balances	
		i) In current accounts	0.00
		ii) In deposit accounts	0.00
		iii) Savings accounts	2,32,69,748.89
			2,32,69,748.89
	48,83,61,758.89		48,83,61,758.89

For: RIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No. 1278640

(CA) RIJAY AGARWAL
Partner
Membership No. 188738
Place: Guwahati
Date: 25.06.2024
UDIN: 24318729BKESM6423



निदेशक / Director
आई.एस.टी.एस. एंड. टे.सी.एस. बंगला
IASST, Paschim Boragaon
गुवाहाटी-781035
Guwahati-781035 Assam, India

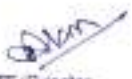
Head of
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-35

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

		(Amount - Rs.)
SCHEDULE 1 - CORPUS/CAPITAL FUND	Current Year	
Part A Capital Fund		
Balance as at the beginning of the year		83,16,99,018.75
Add : Contributions towards Corpus/Capital fund	13,42,76,562.56	
Add : Nominal value of land not considered in earlier year	1.00	
Audit Report now accounted for as per contra		
Less : Capital Grant refund to Funding Agency	21,76,400.00	
Less: Depreciation for the year	11,26,43,871.00	1,94,56,292.56
		85,11,55,311.31
Part B Corpus Fund		
Balance as at the beginning of the year	4,47,16,788.80	
Add : Balance of net income/ (expenditure) transferred from the Income and Expenditure Account	2,33,00,250.34	6,80,17,039.14
		91,91,72,350.45
SCHEDULE 2 - RESERVES AND SURPLUS		
1. Capital Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00
2. Revaluation Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00
3. Special Reserve -IASST Employees Benevolent Fund (664178)		
As per Last Account	11,532.00	
Addition during the year	14,640.00	
Less: Deductions during the year	0.00	26,172.00
4. General Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00
Total		26,172.00


 निदेशक (Director)
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
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SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS:

		<u>Current Year</u>
A. CURRENT LIABILITIES		
1. Acceptances		0.00
2. Sundry Creditors:		
a). For Goods	0.00	
b). Others	63,578.00	63,578.00
3. Advance Received		
4. Interest accrued but not due on:		
a). Secured Loans/Borrowings	0.00	
b). Unsecured Loans/Borrowings	0.00	0.00
5. Statutory Liabilities:		
a). Overdue	0.00	
b). Others	72,253.00	
c). GST	23,634.64	95,887.64
6. Other Current Liabilities:		
Unutilised Grant in Aid	15,65,93,378.12	
Security Deposit Payable	1,00,08,600.00	
Other Current Liabilities	6,99,831.62	16,73,01,809.74
	Total (A)	16,74,61,275.38
B. PROVISIONS		
1. For Taxation	0.00	
2. Gratuity	0.00	
3. Superannuation/Pension	0.00	
4. Accumulated Leave Encashment	0.00	
5. Trade Warranties/Claims	0.00	
6. Others (Specify)	24,33,145.00	24,33,145.00
	Total (B)	24,33,145.00
	Total (A+B)	16,98,94,420.38


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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
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SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE - 8 :

= FIXED ASSETS :-

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01-04-23	Additions/(Deletion)		Total	Depreciation	W.D.V on 31-03-24
		≥180 days	<180 days			
Block "A" : 0%						
Land	1.00	0.00	0.00	1.00	0.00	1.00
Block "B" : 10%						
Building	46,68,96,182.66	88,01,143.00	1,24,16,640.00	48,81,13,964.66	4,81,90,564.00	43,99,23,402.66
Furniture & Fixtures	4,05,06,719.45	5,80,493.00	12,13,691.00	4,23,00,903.45	41,69,407.00	3,81,31,497.45
Block "C" : 15%						
Equipment	28,96,20,895.97	2,06,45,399.56	8,57,92,319.00	39,62,58,614.53	5,30,04,368.00	34,32,54,246.53
Air Conditioner	44,46,474.00	2,80,002.00	37,081.00	47,63,557.00	7,11,752.00	40,51,805.00
Refrigerator	4,791.00	0.00	0.00	4,791.00	719.00	4,072.00
Projector	34,954.00	0.00	0.00	34,954.00	5,243.00	29,711.00
Vehicles	32,01,408.00	0.00	0.00	32,01,408.00	4,80,211.00	27,21,197.00
Plant & Machinery	14,98,745.00	3,83,258.00	16,15,767.00	34,97,770.00	4,03,483.00	30,94,287.00
Block "D" : 40%						
Library	24,86,446.00	0.00	9,55,580.00	34,42,026.00	11,85,694.00	22,56,332.00
Computer	1,02,28,100.02	6,50,167.00	7,05,022.00	1,15,83,289.02	44,92,311.00	70,90,978.02
Printer & Xerox Machine	156.00	0.00	0.00	156.00	62.00	94.00
Computer Software	143.00	0.00	0.00	143.00	57.00	86.00
	81,89,25,015.10	3,15,40,462.56	10,27,36,100.00	95,32,01,577.66	11,26,43,871.00	84,05,57,709.66

For Director
PASST, Paschim Boragaon
Guvahati-781035

For Head of Advanced
Study in Science & Technology
PASST, Paschim Boragaon
Guvahati-781035

For Finance & Accounts Officer
PASST, Paschim Boragaon
Guvahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

		(Amount - Rs.)
<u>SCHEDULE 10 - INVESTMENTS - OTHERS:</u>		Current Year
1. In Government Securities		0.00
2. Other Approved Securities		0.00
3. Shares		0.00
4. Debentures and Bonds		0.00
5. Subsidiaries & Joint Ventures		0.00
6. Others - Investment in FDR		
<u>Extramural Projects</u>		
Opening Balance	2,63,42,071.56	
Investment In FDR	0.00	
Interest accrued	23,61,465.00	
TDS	2,36,158.00	2,84,67,378.56
<u>Misc. Projects</u>		
Opening Balance	5,34,71,798.00	
Add: Current Year Investment (Net)	3,50,00,000.00	
Add: Current Year Interest	23,99,079.00	
Less : TDS	2,14,978.00	
Less: FDR Maturity	2,00,00,000.00	7,06,55,899.00
	Total	9,91,23,277.56


 निदेशक / Director
 आई.ए.एस.टी. पश्चिम बड़गाँव
 IASST, Paschim Boragaon
 गुवाहाटी-35, असम-भारत
 Guwahati-781035 Assam India


 Director
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35




 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC.

		(Amount - Rs.)	
A. CURRENT ASSETS:		Current Year	
1	<u>Inventories:</u>		
a)	Stores and Spares	0.00	
b)	Loose Tools	0.00	
c)	<u>Stock-in-trade:</u>		
	Finished Goods	0.00	
	Work-in-progress	0.00	
	Raw Materials	0.00	0.00
2	<u>Sundry Debtors:</u>		
a)	Debts Outstanding for a period exceeding six months	0.00	
b)	Others	0.00	0.00
3	<u>Cash Balances in Hand:</u> (including cheques/drafts & imprest)		0.00
4	<u>Bank Balances:</u>		
a)	<u>With Scheduled Banks:</u>		
	On Current Accounts	0.00	
	On Deposit Accounts (including margin money)	0.00	
	<u>On Savings Accounts:</u>		
	SBI Khanapara Branch	64,40,611.04	
	SBI Khanapara Branch - Workshop	4,64,627.83	
	SBI - IASST Corpus Fund	3,72,961.93	
	SBI Garchuk Branch - Project	67,25,424.56	
	SBI - Herbal Medicine N.C. Talukdar	11,537.91	
	SBI - IASST Employees Benevolent Fund	40,703.00	
	SBI - Students & Scientist Home (IASST)	2,99,565.82	
	Bank of Baroda - Overhead/Miscellaneous	69,14,316.80	
	HDFC Bank- Project	-	2,12,69,748.89
	<u>On Zero Balance Saving Account:</u>		
	Union Bank of India	0.00	
	Bank of Maharashtra	0.00	
	ICICI Bank:	0.00	0.00
b)	<u>With Non-Scheduled Banks:</u>		
	On Current Accounts	0.00	
	On Deposit Accounts (including margin money)	0.00	
	On Savings Accounts	0.00	0.00
5	<u>Post Office Savings Accounts:</u>		
		Total (A)	2,12,69,748.89

Director
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Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)

B. LOANS, ADVANCES & OTHER ASSETS:		(Amount - Rs.)
	Current Year	
1. <u>Loans:</u>		
a) Staff	23,02,201.00	
b) Other entities engaged in activities/ objectives similar to that of the entity	0.00	
c) Others	0.00	23,02,201.00
2. Deposits, advances and other amounts recoverable in cash or in kind or for value to be received:		
a) On Capital Account	0.00	
b) Prepayments	0.00	
c) Security Deposit	18,27,314.00	
d) <u>Others</u>		
Crest Award	3,43,770.00	
TDS	5,72,327.00	
Others	6,36,401.00	
Receivable from Extramural Project	10,59,895.00	
Advances against Expenditure of Grants (Annexur	1,95,58,165.96	
Advances against Fixed Assets (Annexure "E")	14,45,30,044.00	
Advance from Core Fund (I.C./ Tl.Misc. Account)	-	16,85,27,916.96
3. <u>Income Accrued:</u>		
a) On Investments from Earmarked/Endowment Funds	0.00	
b) On Investments - Others	0.00	
c) On Loans & Advances	0.00	
d) Others (includes income due unrealised - Rs. _____)	0.00	0.00
4. <u>Claims Receivable</u>		0.00
Total (B)		17,08,30,117.96
Total (A+B)		19,20,99,866.85


निदेशक / Director
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गुवाहाटी- 781035 Assam India



10

Joint Secretary
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035


Finance & Accounts Officer
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE
PERIOD ENDED 31ST MARCH 2024

(Amount - Rs.)
Current Year

SCHEDULE 13 - GRANTS/SUBSIDIES

(Irrevocable Grants & Subsidies Received)

1) Central Government (Salary & General Grant)	28,02,56,842.00
Amount Received during the year	28,93,00,000
Less : Grant Refunded through T	90,43,158
2) State Government (s)	0.00
3) Government Agencies	0.00
4) Institutions/Welfare Bodies	0.00
5) International Organisations	0.00
6) Others	0.00
Total	28,02,56,842.00




 निदेशक / Director
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 IASST, Paschim Boragaon
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 Registrar
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35


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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

<u>SCHEDULE 17 - INTEREST EARNED</u>	<u>(Amount - Rs.)</u>
	<u>Current Year</u>
1) On Term Deposits:	
a) With Secheduled Banks	72,09,754.00
b) With Non-Secheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
2) On Savings Accounts:	
a) With Secheduled Banks	3,17,603.00
b) With Non-Secheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
3) On Loans:	
a) Employees/Staff	0.00
b) Others	0.00
4) Interest on Debtors and Other Receivables	0.00
Total	<u>75,27,357.00</u>


 निदेशक : Director
 आई.ए.एस.एस.टी., पश्चिम बड़गाँव
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

SCHEDULE 18 - OTHER INCOME

(Amount - Rs.)

Current Year

1) Profit on Sale/ Disposal of Assets:	
a) Owned Assets	0.00
b) Assets acquired out of grants, or received free of cost	0.00
2) Export Incentives Realised	0.00
3) Fees for Miscellaneous Services	0.00
4) Miscellaneous Income	1,58,51,143.96
Total	<u>1,58,51,143.96</u>

SCHEDULE 20 - ESTABLISHMENT EXPENSES

a) Salaries & Allowances	8,77,04,540.00
b) Other Allowances & Bonus	11,06,000.00
c) Contribution to Provident Fund	0.00
d) Contribution to Pension fund	2,03,38,698.00
e) Staff Welfare Expenses	0.00
f) Expenses on Employees' Retirement and Terminal Benefits	1,05,52,704.00
g) Others	69,85,824.00
Total	<u>12,66,87,766.00</u>


 निदेशक / Director
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

<u>SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC.</u>		<u>(Amount - Rs.)</u>
		<u>Current Year</u>
a) Contingency Expenses		2,88,95,185.57
b) Works and Services		4,04,26,102.00
c) Training and Conference		11,13,054.00
d) Travelling and Conveyance Expenses		19,49,396.00
e) Security Services		1,27,58,760.00
f) Financial Assistance for Seminar/Workshop		8,68,782.00
g) Salary (Contractual Employees)		1,25,10,179.00
h) Fellowship (JRF/SRF/IPDF)		3,44,82,034.00
i) Hospitality		17,25,116.77
j) Printing & Stationery		99,290.00
	Total	13,48,27,899.34


 निदेशक Director
 आई ए एस आर टी, पश्चिम बड़ागाँव
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 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

SCHEDULE 22 - EXPENDITURE ON GRANT, SUBSIDIES ETC.

(Amount - Rs.)

Current Year

a) Grants given to Institutions/ Organisations

Contingency Expenses

-

Laboratory Consumables

-

Works and Services

-

Institutional Projects

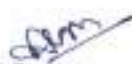
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-

b) Subsidies given to Institutions/ Organisations

0.00

Total


निदेशक / Director
आई.ए.एस.ए.टी., पश्चिम बोरगाँव
IASST, Paschim Boragaon
गुवाहाटी-35 असम भारत
Guwahati-781035 Assam, India




महोदय / Officer
Science & Technology
Paschim Boragaon, Guwahati-35


Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GUWAHATI- 781035

<u>Annexure "A" - Unutilised Grant</u>		<u>Amount(₹)</u>
Opening Balance		19,49,85,607.68
Add : Capital Grant received during the year	9,45,27,489.00	
Add : Capital Grant Reassigned from C N A	13,72,283.00	9,58,99,772.00
		29,08,85,379.68
Less : Contribution towards Capital Fund (Addition to Fixed Assets)		13,42,76,562.56
Less : Refund of Grant through TSA (Capital Grant)		15,439.00
Closing Balance		15,65,93,378.12
<u>Annexure "B" - Security Deposit Payable</u>		
Earnest Money		14,32,598.00
Earnest Money (Misc. Overhead)		3,10,614.00
Security Deposits (Misc.)		5,49,800.00
Security Deposits (Works)		77,15,588.00
		1,00,08,600.00
<u>Annexure "C" - Other Current Liabilities</u>		<u>Amount(₹)</u>
Payable to Core Fund		3,821.00
Payable against Equipments		17,565.00
Advance from DST to Project		1,72,919.96
IASST Project Fund		10,334.66
Others		4,95,191.00
		6,99,831.62




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 रजिस्ट्रार
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Annexure "D" - Advance against expenditure on grant :

Amount(₹)

Current year unadjusted advance :

	Project	DST General	Total	
Salary (Against House Building)	0.00	21,81,668.00	21,81,668.00	
Salary (Other Advance)	14,65,800.00	1,20,533.00	15,86,333.00	
Institutional Project	0.00	1,01,316.00	1,01,316.00	
Works and Services	0.00	14,83,703.00	14,83,703.00	
Contingency	37,600.00	13,21,210.00	13,58,810.00	
Overhead	0.00	0.00	0.00	
Training	56,000.00	0.00	56,000.00	
Travel	25,000.00	0.00	25,000.00	
Advance to Extramural Project	0.00	0.00	0.00	
Consumables	66,010.00	2,38,906.00	3,04,916.00	70,97,746.00

Earlier years unadjusted advance :

	Project	DST General	Total	
Salary	0.00	52,20,839.00	52,20,839.00	
Contingency	0.00	3,35,698.00	3,35,698.00	
Institutional Project	0.00	19,116.00	19,116.00	
Consumables	0.00	17,80,888.00	17,80,888.00	
Others	0.00	21,093.00	21,093.00	
Training & Conference	0.00	8,78,852.00	8,78,852.00	
Works and Services	0.00	63,77,002.96	63,77,002.96	
Advance to Extramural Project	0.00	1,29,132.00	1,29,132.00	
Outsourcing	0.00	0.00	0.00	1,47,62,620.96

TOTAL :

2,18,60,366.96

Annexure "E" - Advance against Fixed Assets :
Current year unadjusted advance :

	Project	DST General	Total	
Building	0.00	3,32,72,000.00	3,32,72,000.00	
Dedicated Power Supply	0.00	11,42,776.00	11,42,776.00	
Computer & Peripherals	0.00	0.00	0.00	
Equipment	0.00	0.00	0.00	3,44,14,776.00

Earlier years unadjusted advance :

	Project	DST General	Total	
Equipment	0.00	2,62,08,376.00	2,62,08,376.00	
Building	0.00	8,26,17,800.00	8,26,17,800.00	
Furniture & Fixtures	0.00	34,324.00	34,324.00	
Dedicated Power Supply	0.00	0.00	0.00	
Computer & Peripheral	0.00	12,54,768.00	12,54,768.00	11,01,15,268.00
				14,45,30,044.00


 Director
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 Finance & Accounts Officer
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 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

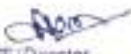
PASCHEM BORAGAON, GUWAHATI- 781035

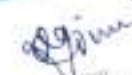
ANNEXURE : "F"

DETAILS OF GRANT-IN-AID FOR THE FINANCIAL YEAR 2023-24

Sl.	Particulars	Capital Grant (₹)	Revenue Grant (₹)	Amount (₹)
1	DST General Fund	9,34,00,000.00	28,93,00,000.00	38,27,00,000.00
2	Molecular mechanistic insight of the bioactive	-	2,41,500.00	2,41,500.00
3	Solar Power Driven Plasmonic Photocatalysis in	-	3,96,667.00	3,96,667.00
4	Electrocelloric effect and energy storage in free	-	23,84,000.00	23,84,000.00
5	Investigating the potential of probiotic bacteria	-	1,05,978.00	1,05,978.00
6	Study of Effect of rhamnolipid biosurfactant on	-	1,21,800.00	1,21,800.00
7	ST/SC Community Development programme in	-	2,50,00,000.00	2,50,00,000.00
8	Non-Collinear Magnetism in Heusler Materials	-	5,50,000.00	5,50,000.00
9	Full spectrum Bio-Incubator for NER at IASST	-	17,60,000.00	17,60,000.00
10	Experimental investigation of Zonal Flow and	1,20,388.00	5,47,306.00	6,67,694.00
11	Understanding the Virulence mechanism of	-	24,72,000.00	24,72,000.00
12	Application of Dielectric Barrier Discharged Cold	-	13,91,570.00	13,91,570.00
13	Developing carbon based biopolymer	-	7,62,597.00	7,62,597.00
14	3D time domain simulation of near field ocean	-	14,65,800.00	14,65,800.00
15	Sanjib Sau Inspire Fellow	-	8,03,096.00	8,03,096.00
16	Development of Pt based ternary Oxygen	-	4,00,000.00	4,00,000.00
17	Application of wetland macrophytes as a	-	6,00,000.00	6,00,000.00
18	Development of layered double hydroxide (LDH)	-	1,50,000.00	1,50,000.00
19	Reimbursement of travel grant for attending 7th	-	94,672.00	94,672.00
20	Pranami Bharadwaj, INSPIRE Fellow	-	4,25,096.00	4,25,096.00
21	Mritunjoy P Ghosh NPDF	-	7,06,800.00	7,06,800.00
22	Study of antidiabetic effects of folkloric medicines	-	5,20,918.00	5,20,918.00
23	Fellowship stipend and contingent expenditure to	-	99,120.00	99,120.00
24	Integrating herbal medicine of NER with	10,06,901.00	-	10,06,901.00
		9,45,27,489.00	33,04,98,930.00	42,50,26,409.00




 निदेशक / Director
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 Guwahati-781035 Assam India


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 Institute of Advanced
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 Paschim Boragaon, Guwahati-35


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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE * 24 * : **SIGNIFICANT ACCOUNTING POLICES :**

1. ACCOUNTING CONVENTION :

The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of Accounting.

2. REVENUE RECOGNITION :

(a) Income on Interest bearing securities and Term Deposits is recognised on accrual basis as and when these are realised.

(b) Income other than Interest Income are recognised on Cash basis.

3. INVESTMENTS :

Term deposits with Banks are taken as Investments and valued at accrual basis.

4. FIXED ASSETS :

Fixed Assets are stated at cost of acquisition, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition less depreciation.

5. DEPRECIATION :

(a) Depreciation on Fixed assets purchased/acquired/ constructed out of Government Grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

(b) Depreciation is charged to Capital Fund by way of reducing the net value of Fixed Assets.

6. GOVERNMENT GRANTS/SUBSIDIES :

(a) Revenue grants are shown realisation basis and expenditure thereof is charged to appropriate revenue heads. In the case Capital Grant, the Capital Fund is credited to the extent of the amount of acquisition of Fixed Assets.

(b) During the Financial Year, the Institute received some Grants or re-assignment of Grants

(c) During the Financial Year, the Institute received Grant-in-Aid through Tressury Single Account (TSA) mode. The remaining unutilised grants as on 31 Mrach, 2024 has returned back automatically to TSA as per new revised procedure of fund flow system.


 Director
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 Paschim Boragaon, Guwahati-781035 Assam India


 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035


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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE " 25 " : CONTINGENT LIABILITIES & NOTES TO ACCOUNTS :

- (i) No provision has been made in respect of Leave Salary.
- (ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.
- (iii) In the opinion of the Management, the Current Assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.
- (iv) Balances under Current Liabilities, Loans and Advances are subject to confirmation / reconciliation / adjustments, if any.
- (v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.
- (vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.
- (vii) Any surplus balance that remains in Income & Expenditure A/c after adjusting the expenditure with the income is transferred to Capital/Corpus Fund.
- (viii) Bank Interest received in SBI Khanapara (DST) during the year is not recognised as income instead shown as Current Liability because it will be refunded to DST, Govt. of India.
- (ix) Any surplus of revenue grant alongwith other income over revenue expenditure of Extramural Projects is transferred to earmarked fund and it isn't included in the preparation of the Consolidated Income & Expenditure Account.
- (x) As per Fixed Deposit Statement provided by Bank concerned, Total Amount of Interest Accrued is Rs. 1728643/- and its respective TDS is Rs. 175513/- However, Total Interest Amount being reflected in 26AS under both PAN (TAN of Deductor: MUMS86176G) is Rs. 2361463/- (TDS 236158/-) So, the difference of Rs. 632822/- being the interest amount along with TDS of Rs. 60045/- has been shown as accrued interest of FD as the management is unable to provide the exact details of it.
- (xi) TDS of Rs 5000/- of Premium Serums and Vaccines Pvt Ltd has not been considered in books of accounts as the gross amount was credited to SBI Khanapara Branch Workshop on 01/01/2024
- (xii) TCS of Rs 343/- of Bruker India Scientific Pvt Ltd has not been considered in books of accounts since the management was unable to provide the details of payment made to the party where such TCS amount has also been paid.
- (xiii) As discussed by the management Nominal Value of Rs 1 has been shown in Land to comply with the requirement of C&AG Auditor and the same has been adjusted in Capital Fund Account as prior period adjustment.


 Finance Director
 ASST. Paschim Boragaon
 Guwahati-781035 Assam India

20

 Chairman
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035




 Finance & Accounts Officer
 ASST. Paschim Boragaon
 Guwahati-781035

BALANCE SHEET OF EXTRAMURAL PROJECTS AS ON 31ST MARCH, 2024

Finance & Accounts Officer
IASST, Paschim Borangon
Gowahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY			
PASCHIM BORAGAON, GARCHUK, GUWAHATI-781025			
RECEIPTS & PAYMENTS ACCOUNT OF EXTRAMURAL PROJECTS FOR THE YEAR ENDED 31ST MARCH 2024			
RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
I Opening Balances:		I EXPENSES:	
a) Cash in hand	0.00	a) Establishment Expenses	
b) Bank Balances		Salary	2,22,93,939.00
i) In current account	0.00	b) Administrative Expenses/ Expenses on Grant	
ii) In deposit account	0.00	Consumables	2,08,32,818.71
iii) Savings accounts	1,67,87,769.57	Contingency	42,72,961.00
	1,67,87,769.57	Travel	9,66,079.00
		Overhead	10,50,183.00
II Grants Received		Meeting/ Training	4,18,982.00
a) From Government of India		Other Cost	1,52,600.29
Capital Grant	11,27,489.00	Advance	1,52,010.00
Revenue Grant	4,11,98,920.00		2,28,65,574.00
(As per Annexure II)			
b) From State Government	0.00	II Payments made against funds for various projects	0.00
c) C N A Reassignment			
Capital Grant	13,72,383.00		
Revenue Grant	1,17,75,114.00		
	5,74,23,806.00		
III Income from Investments from		III Investments and deposits made	
a) Earmarked/ Endow. Funds	0.00	a) Out of Earmarked/ Endow. Funds	0.00
b) Own Funds (Oth. Investments)	0.00	b) Out of Own Funds	0.00
IV Interest Received		IV Expenditure on Fixed Assets & Capital WIP	
a) On Bank deposits	4,51,323.24	a) Purchase of Fixed Assets	33,88,454.00
b) Loans, Advances, etc.	0.00	Equipments	33,88,454.00
	4,51,323.24	b) Expenditure on Capital W	0.00
V Other Income		V Refund of Surplus money/Loans	
Other Receipts	0.00	a) To the Government of India	0.00
IASST Project Fund	10,334.66	b) To the State Government	0.00
	10,334.66	c) To other providers of Funds	0.00
VI Amount Borrowed	0.00	VI Finance charges (Interest)	0.00
		VII Other Payments	0.00
		Bank Charges	0.00
		Fund refunded against completed projects (Bijay Kish / D)	52,56,576.00
		Capital	13,77,662.00
		Revenue	38,76,489.00
		Interest Refund	2,485.00
		Refund to C N A as on 31.03.24	90,21,674.00
		Receivable from Extramural Project	1,60,056.00
		VIII Closing Balance:	
		a) Cash in hand	0.00
		b) Bank Balances	
		i) In current accounts	0.00
		ii) In deposit accounts	0.00
		iii) Savings accounts	67,76,962.47
			67,76,962.47
	7,47,23,235.47		7,47,23,235.47
For BIJAY AGARWAL & CO. CHARTERED ACCOUNTANTS Firm Registration No. 32786		 Director IASST, Paschim Boragaon Guwahati-781025 Assam India	
 (CA PRIYA AGARWAL) Partner Membership No. 318728 Place : Guwahati Date : 25-06-2024 UDIN : 24318728BKESEMG423		 Institute of Advanced Study in Science & Technology Paschim Boragaon, Guwahati-781025	
		 Finance & Accounts Officer IASST, Paschim Boragaon Guwahati-781025	

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PANCHSHEM BORANGAON, GUWAHATI, ASSAM

= FARMERED FUNDS

SCHEDULE - 3

Particulars	Salary	Contingency	Travel	Communication	Meeting & Training	Overhead	Misc.	Workshop & Conference	Research Fellow	Complimentary Time	Contribution	Bank and other Interest	Retired Against Advance (Receipt)	Retired Payment	Total
a) Opening Balance	3,32,40,533	5,78,712	4,48,233	30,56,545	96,497	20,18,192	25,76,979	3,07,697	1,27,499	5,25,926	-2,80,000	1,33,73,146	0	0	4,23,49,995.80
b) Addition to the Fund															
i) Grants	1,78,30,332	25,08,675	18,16,051	1,81,87,469	0	30,33,295	0	0	0	0	0	0	0	0	4,13,96,923.00
ii) Reassignment from I & A	68,28,237	5,44,307	38,75,146	97,75,858	4,92,129	0	4,96,119	0	0	0	0	0	-2,55,146	0	1,27,27,114.80
iii) Other Receipts	0	0	0	0	0	0	0	0	0	0	0	28,12,792	0	0	28,12,792.24
	2,46,58,569	30,52,982	56,91,296	2,18,61,287	4,92,129	30,33,295	4,96,119	0	0	0	0	28,12,792	-2,55,146	0	5,27,96,928.04
TOTAL (a+b)	4,77,94,380	46,31,692	55,48,432	2,59,37,770	5,82,626	30,56,187	30,71,499	3,07,697	1,27,499	5,25,926	-2,80,000	1,61,86,937	-2,55,146	0	10,01,76,919
c) Payment towards objectives of Funds	2,22,95,999	18,19,265	9,66,019	2,18,20,945	4,18,962	30,56,181	3,36,270	0	0	0	0	0	1,32,000	0	4,69,64,971.00
d) Advances															
i) Advances Against	0	29,340	0	2,06,446	0	8,000	0	0	0	0	0	0	0	0	2,43,886.00
ii) Advances Given	14,61,880	37,680	25,330	96,071	36,000	0	0	0	0	0	0	0	0	0	16,90,800.00
Interest Refund	0	0	0	0	0	0	0	0	0	0	0	-2,483	0	0	-2,483.00
	14,61,880	37,680	25,330	96,071	36,000	0	0	0	0	0	0	-2,483	0	0	16,90,800.00
e) Current Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
i) Liability Against	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ii) Liability Against	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
f) Expenditure towards objectives of Funds	1,08,28,139	18,11,021	9,40,019	2,06,61,381	3,62,962	30,56,181	3,36,270	-40	0	0	-8	2,483	1,32,018	0	4,55,60,843.00
g) Adjustment of Fund	26,33,149	13,81,816	36,83,479	18,66,082	2,10,028	28,008	22,40,395	0	729	0	0	0	-3,00,456	-1,70,930	1,19,26,403.00
h) Net Balance at the year end (b-f-g)	28,62,973.4	10,66,11.2	1,09,43.2	25,93,057.6	963.0	30,56,079.6	1,87,53.3	1,07,087.8	1,26,643.0	5,25,926.0	3,00,000.0	3,14,440.5	6,000.0	1,99,000.0	4,26,7911.2



Director
Institute of Advanced Study in Science and Technology
Panchsheim Borangon
Guwahati-781035 Assam India

President
Institute of Advanced Study in Science and Technology
Panchsheim Borangon
Guwahati-781035

Finance & Accounts Officer
IASST, Panchsheim Borangon
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

		(Amount - Rs.)
<u>SCHEDULE 1 - CORPUS/CAPITAL FUND</u>		<u>Current Year</u>
Balance as at the beginning of the year		11,69,94,383.24
Add : Contributions towards Corpus/Capital fund	46,55,355.00	
(Deduct) : Capital Grant refund to Funding Agency	21,76,400.00	
Less : Depreciation for the year	<u>1,84,10,241.00</u>	-1,59,31,286.00
		<u>10,10,63,097.24</u>




निदेशक / Director
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गुवाहाटी-35, असम, भारत
Guwahati-781035, Assam, India


Institute of Advanced
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS:			(Amount - Rs.)
			Current Year
A. CURRENT LIABILITIES			
1. Acceptances			0.00
2. Sundry Creditors:			
a). For Goods		0.00	
b). Others		0.00	0.00
3. Advances Received			0.00
4. Interest accrued but not due on:			
a). Secured Loans/Borrowings		0.00	
b). Unsecured Loans/Borrowings		0.00	0.00
5. Statutory Liabilities:			
a). Overdue		0.00	
b). Others		0.00	0.00
6. Other Current Liabilities:			
Unutilised Grant in Aid	(As per Annexure "A"	64,10,655.17	
Earnest Money		10,32,598.00	
Other Current Liabilities	(As per Annexure "B"	2,01,679.62	76,44,932.79
		Total (A)	76,44,932.79
B. PROVISIONS			
1. For Taxation			0.00
2. Gratuity			0.00
3. Superannuation/Pension			0.00
4. Accumulated Leave Encashment			0.00
5. Trade Warranties/Claims			0.00
6. Others			0.00
		Total (B)	0.00
		Total (A+B)	76,44,932.79




Director
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Paschim Boragaon, Guwahati-781035, Assam, India


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Finance & Accounts Officer
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035, Assam, India




 निदेशक / Director
 आई.ए.एस.आर.टी., पश्चिम बरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी-35, असम, भारत
 Guwahati-781035 Assam India


 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI-781035

SCHEDULE - 8 :

= FIXED ASSETS =

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01-04-23			Addition/(Deletion)		Total	Depreciation	W.D.V on 31-03-24
	≥180 days	<180 days						
Block 'B' : 10% Furniture & Fixtures	25,74,402.00	0.00	0.00	0.00	0.00	25,74,402.00	2,57,440.00	23,16,962.00
Block 'C' : 15% Equipments	11,77,67,341.24	18,47,306.00	28,08,049.00	28,08,049.00	12,24,22,696.24	1,81,52,801.00	10,42,69,895.24	
	12,03,41,743.24	18,47,306.00	28,08,049.00	28,08,049.00	12,49,97,048.24	1,84,10,241.00	10,65,86,857.24	



[Signature]
 Director
 Institute of Advanced Study in Science and Technology
 Paschim Boragaon
 Guwahati-781035 Assam India

6

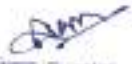
[Signature]
 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

[Signature]
 Assistant
 Institute of Advanced Study in Science and Technology
 Paschim Boragaon, Guwahati

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

	(Amount - Rs.)	
	<u>Current Year</u>	
<u>SCHEDULE 10 - INVESTMENTS - OTHERS:</u>		
1. In Government Securities		0.00
2. Other Approved Securities		0.00
3. Shares		0.00
4. Debentures and Bonds		0.00
5. Subsidiaries & Joint Ventures		0.00
6. Investment in FDR		
Opening Balance	2,63,42,071.56	
Add: Investment In FDR	0.00	
Add: Interest accrued	23,61,465.00	
Less: TDS	2,36,158.00	
Less: Maturity Value of STDR	-	2,84,67,378.56
	Total	2,84,67,378.56


 Director
 আই.এ.এস.আই.সি.টি, পশ্চিম বড়াগাওঁ
 IASST, Paschim Boragaon
 গুৱাহাটী-৩৫ অসম,ভাৰত
 Guwahati-781035 Assam India




 Institute of Advanced
 Study in Science & Technology
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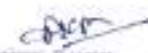

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SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC.

	(Amount - Rs.)	
A. CURRENT ASSETS:	Current Year	
1. <u>Inventories:</u>		
a) Stores and Spares	0.00	
b) Loose Tools	0.00	
c) <u>Stock-in-trade:</u>		
Finished Goods	0.00	
Work-in-progress	0.00	
Raw Materials	0.00	0.00
2. <u>Sundry Debtors:</u>		
a) Debts Outstanding for a period exceeding six months	0.00	
b) Others	0.00	0.00
3. <u>Cash Balances in Hand:</u> (including cheques/drafts & imprest)		0.00
4. <u>Bank Balances:</u>		
a) <u>With Scheduled Banks:</u>		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
<u>On Savings Accounts:</u>		
SBI Garchuk Branch - Project	67,25,424.56	
SBI - Herbal Medicine	11,537.91	
HDFC Bank	-	67,36,962.47
<u>On Zero Balance Saving Account</u>		
Union Bank of India	0.00	
Bank of Maharashtra	0.00	
ICICI Bank	0.00	0.00
b) <u>With Non-Scheduled Banks:</u>		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts	0.00	0.00
5. <u>Post Office Savings Accounts:</u>		0.00
	Total (A)	67,36,962.47


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8

 Institute of Advanced Study in Science & Technology
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)

<u>B. LOANS, ADVANCES & OTHER ASSETS:</u>		<u>(Amount - Rs.)</u>	
		<u>Current Year</u>	
1 <u>Loans:</u>			
a) Staff		0.00	
b) Other entities engaged in activities/objectives similar to that of the entity		0.00	
c) Others			
Advance to Overhead A/c		0.00	
Advances against Expenditure of Grants		0.00	0.00
2 <u>Advances and other amounts recoverable in cash or in kind or for value to be received:</u>			
a) On Capital Account		0.00	
b) Prepayments		0.00	
c) <u>Others</u>			
Crest Award	3,43,770.00		
TDS	4,54,503.00		
Receivable from Extramural Project	10,59,895.00		
Advance to Misc.	60,96,164.00		
Advances against Expenditure of Grants (Annexure "C")	16,50,410.00		96,04,742.00
3 <u>Income Accrued:</u>			
a) On Investments from Earmarked/Endowment Funds		0.00	
b) On Investments - Others		0.00	
c) On Loans & Advances		0.00	
d) Others (includes income due unrealised - Rs. _____)		0.00	0.00
4 <u>Claims Receivable</u>			0.00
		<u>Total (B)</u>	<u>96,04,742.00</u>
		<u>Total (A+B)</u>	<u>1,63,41,704.47</u>



Director
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Guwahati-781035, Assam India

Institute of Advanced
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Paschim Boragaon, Guwahati-781035

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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GUWAHATI- 781035

<u>Annexure "A" - Unutilised Grant</u>	<u>Amount(₹)</u>
Opening Balance	85,66,238.17
Add : Capital Grant received during the year	11,27,489.00
Add : Capital Grant Reassigned from C N A	13,72,283.00
	<u>1,10,66,010.17</u>
Less : Contribution towards Capital Fund (Addition to Fixed Assets)	46,55,355.00
Closing Balance	<u>64,10,655.17</u>

<u>Annexure "B" - Other Current Liabilities</u>	<u>Amount(₹)</u>
Payable against Equipment	17,565.00
<u>DST General Fund</u>	
Bank of Baroda - Conference (000918)	1,07,090.00
SBI Garchuk - Seminar (888433)	64,830.00
HDFC Bank	999.96
	<u>1,72,919.96</u>
IASST Other Fund (Equipment, Consumables & Travel)	860.00
IASST Project Fund	10,334.66
	<u>2,01,679.62</u>

<u>Annexure "C" - Advance against expenditure on grant :</u>	<u>Amount(₹)</u>
Current year unadjusted advance :	
Salary	14,65,800.00
Contingency	37,600.00
Consumable	66,010.00
Meeting & Training	56,000.00
Travel	25,000.00
	<u>16,50,410.00</u>
TOTAL :	<u>16,50,410.00</u>




 Director
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035 Assam India


 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035


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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI-781035

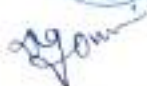
ANNEXURE : "D"

DETAILS OF GRANT-IN-AID OF EXTRAMURAL PROJECTS FOR THE FINANCIAL YEAR 2023-24

Sl. Name of the Project	Capital Grant (₹)	Revenue Grant (₹)	Amount (₹)
1 Molecular mechanistic insight of the	-	2,41,500.00	2,41,500.00
2 Solar Power Driven Plasmonic	-	5,96,667.00	5,96,667.00
3 Electrochloric effect and energy storage	-	23,84,000.00	23,84,000.00
4 Investigating the potential of probiotic	-	1,05,978.00	1,05,978.00
5 Study of Effect of rhamnolipid	-	1,21,800.00	1,21,800.00
6 ST/SC Community Development	-	2,50,00,000.00	2,50,00,000.00
7 Non-Collinear Magnetism in Heusler	-	5,50,000.00	5,50,000.00
8 Full spectrum Bio-Incubator for NER at	-	17,60,000.00	17,60,000.00
9 Experimental investigation of Zonal	1,20,588.00	5,67,306.00	6,67,894.00
10 Understanding the Virulence mechanism	-	24,72,000.00	24,72,000.00
11 Application of Dielectric Barrier	-	13,91,570.00	13,91,570.00
12 Developing carbon based biopolymer	-	7,62,597.00	7,62,597.00
13 3D time domain simulation of near field	-	14,65,800.00	14,65,800.00
14 Sanjib Sau Inspire Fellow	-	8,03,096.00	8,03,096.00
15 Development of Pt based ternary Oxygen	-	4,00,000.00	4,00,000.00
16 Application of wetland macrophytes as a	-	6,00,000.00	6,00,000.00
17 Development of layered double	-	1,50,000.00	1,50,000.00
18 Reimbursement of travel grant for	-	94,672.00	94,672.00
19 Pranami Bharadwaj, INSPIRE Fellow	-	4,25,096.00	4,25,096.00
20 Mrityunjoy P Ghosh NPDF	-	7,06,800.00	7,06,800.00
21 Study of antidiabetic effects of folkloric	-	5,20,918.00	5,20,918.00
22 Fellowship stipend and contingent	-	99,120.00	99,120.00
23 Integrating herbal medicine of NER with	10,06,901.00	-	10,06,901.00
	11,27,489.00	4,11,98,920.00	4,23,26,409.00

11


 निदेशक / Director
 आई ए एस एन टी, पश्चिम बङ्गाल
 IASST, Paschim Boragaon
 गुवाहाटी-781035- असम भारत
 Guwahati-781035 Assam India



 Registrar
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-78


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

(34)

Statement of Financial Position as at 31/12/2024									
	2024	2023	2022	2021	2020	2019	2018	2017	2016
Assets									
Current Assets									
Cash and bank balances	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Accounts receivable	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Inventory	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Prepaid expenses	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Other current assets	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Non-current Assets									
Property, plant and equipment	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Intangible assets	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Other non-current assets	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Liabilities									
Current Liabilities									
Accounts payable	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Short-term debt	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Other current liabilities	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Non-current Liabilities									
Long-term debt	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Other non-current liabilities	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Equity									
Paid-up capital	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Reserves	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Other equity components	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000

 Director
 Institute of Advanced Study in Science and Technology
 14955, Pasirpang Road
 Singapore 110155

 Financial Officer
 Institute of Advanced Study in Science and Technology
 14955, Pasirpang Road
 Singapore 110155


 Institute of Advanced Study in Science and Technology
 14955, Pasirpang Road
 Singapore 110155

239

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Signature: _____
 Name: Dr. Anshu Singh
 Address: Panchsheel Bhawan
 Telephone: 2611000
 Gurgaon-122001, Haryana India

Finardi & Accounts Officer
IASST Psychiatric Hospital
Gandhinagar-560025

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI- 781035

SCHEDULE " 24 " : SIGNIFICANT ACCOUNTING POLICES :

1. ACCOUNTING CONVENTION :

The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of accounting.

2. REVENUE RECOGNITION :

(a) Income on Interest bearing securities and Term Deposits is recognised on accrual basis as and when these are realised.

(b) Income other than Interest Income are recognised on Cash basis.

3. INVESTMENTS :

Term Deposits with Banks are taken as Investments and valued at accrual basis.

4. FIXED ASSETS :

Fixed Assets are stated at cost of acquisition, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition less depreciation.

5. DEPRECIATION :

(a) Depreciation on Fixed assets purchased/acquired/ constructed out of government grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

(b) Depreciation is charged to Capital Fund by way of reducing the net value of Fixed Assets.

6. GOVERNMENT GRANTS/SUBSIDIES :

(a) Revenue grants are shown realisation basis and expenditure thereof is charged to appropriate revenue heads. In the case Capital Grant, the Capital Fund is credited to the extent of the amount of acquisition of Fixed Assets.

(b) During the Financial Year, the Institute received some Grants or re-assignment of Grants through Central Nodal Agency (CNA). The remaining unutilised grant as on 31 March, 2024 has returned back automatically to CNA as per new revised procedure of fund flow system.


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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
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SCHEDULE " 25 " : CONTINGENT LIABILITIES & NOTES TO ACCOUNTS :

- (i) Any surplus of Revenue Grant alongwith Other Income over Revenue Expenditure is transferred to Earmarked Fund.
- (ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.
- (iii) In the opinion of the Management, the Current assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.
- (iv) Balances under Current Liabilities, Loans and Advances are subject to conformation /reconciliation / adjustments, if any.
- (v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.
- (vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.
- (vii) As projects are earmarked funds, its transactions have not been included in the preparation of Consolidated Income & Expenditure Account.
- (viii) As per Fixed Deposit Statement provided by Bank concerned, Total Amount of Interest Accrued is Rs. 1728643/- and its respective TDS is Rs. 175513/- However, Total Interest Amount being reflected in 26AS under both PAN (TAN of Deductor: MUMS86176G) is Rs. 2361465/- (TDS 236158/-) So, the difference of Rs. 632822/- being the interest amount along with TDS of Rs. 60645/- has been shown as accrued interest of FD as the management is unable to provide the exact details of it.


 निदेशक / Director
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 अध्यक्ष
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BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
FRN - 327864E

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baccient@gmail.com

GIR 12-A
(See Rule 29(1))

**FORM OF UTILIZATION CERTIFICATE
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION**

UTILIZATION CERTIFICATE FROM 1st APRIL, 2023 TO 31st March, 2024
In respect of receipting/non receipting
GRANTS-IN-AID/ BUDGET/ CREATION OF CAPITAL ASSETS

- Name of the Scheme - The Institute of Advanced Study in Science & Technology
- Whether receipting or non-receipting grants - Receipting and Non-Receipting Grants
- Grants position at the beginning of the financial year:

(i) Cash in Hand/Bank - 53,35,926.79
(ii) Unreceived Advances - Nil
(iii) Total - Nil

- Details of grants received, expenditure incurred and closing balance - (Actuals)

Unspent Balance of Grants received years (Rs.)	Interest earned thereon (Rs.)	Interest deposited back to the Government (Rs.)	Section Number	Section Date	Amount (Rs.)	Total Available funds (Rs.) (5+ (1+2+3))	Expenditure incurred (Rs.)	Unspent Balance Refunded through T/A	Closing Balance (Rs.) (3+4+6)
1	2	3	4	5	6	7	8	9	10
53,35,926.79	4,32,500.92	21,96,984.80	Annexure-1	Annexure-1	38,27,00,000.00	38,72,81,305.71	37,39,44,555.81	40,38,597.00	72,78,200.80
Grand-in-all-General			Grand-in-all-Special		Grand-in-all-Creation of Capital Assets		Total		
54,46,26,932.51			12,74,86,492.80		5,38,14,261.56		72,78,200.80		

- Details of grants position as on: 31/03/2024

(i) Cash in Hand/ Bank - 72,78,200.80
(ii) Unreceived Advances - Nil
(iii) Total - Nil

Note

(1) Unspent Balance of Grants received years includes Opening Bank Balance of Rs.53,35,926.79

(2) During the FY 2023-24 Institute has earned Rs.4,32,500.92 as Interest and Rs. 49,61.92 as Other Receipt. Utilization Certificate does not have the provision for showing of Other Receipt separately. Therefore this amount is added up to Interest earned column. (Rs.4,32,500.92)+

(3) Closing Balance of Rs.72,78,200.80/- includes: (i) Cash in Hand/Bank Balance which are 988 Khurpura Core Fund A/- Rs. 64,43,411.44/-, 583 Khurpura Workshop A/- Rs.4,44,627.81/-, and 888 Khurpura Campus A/- Rs.3,72,961.93/-

(4) Institute will submit the annual position and unspent balance, if any, after finalisation of its Books of Accounts for the FY 2023-24

Certified that I have verified myself that the conditions on which grants was sanctioned have been fulfilled/are being fulfilled and that I have exercised following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

(i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed by the relevant Act/Rules/Granting instructions (pertaining to A/C Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/ accounts.

(ii) There exists internal controls for safeguarding public funds/assets, monitoring compliance and achievement of physical targets against the financial inputs, ensuring quality in asset creation and the periodic evaluation of internal controls is necessary to ensure their effectiveness.

(iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/ and scheme guidelines.

(iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.

(v) The expenditure on various components of the scheme was in the proportion authorized as per the scheme guidelines and terms and conditions of the grant-in-aid.

Date: 01.04.2024
Place: Cuttack
LTIN: 341052812301025

[Signature]
For Secretary
Institute of Advanced Study in Science & Technology
Parashram Boraghat, Cuttack

[Signature]
Finance & Accounts Officer
IASST, Paschim Boraghat
Cuttack-751025

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E
[Signature]
CA BIJAY AGARWAL
Partner
Firm Registration No.327864E
Place: Cuttack

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Grants-in-Aid received for the year 2023-24

Annexure: I

Sl. No.	Sanction Letter No.	Date	Amount (₹)
1	AI/IASST/GEN/003/2023/1	06/04/2023	2,45,00,000.00
2	AI/IASST/GEN/003/2023/2	26/06/2023	3,00,00,000.00
3	AI/IASST/GEN/003/2023/3	26/09/2023	2,20,00,000.00
4	AI/IASST/GEN/003/2023/4	11/12/2023	2,50,00,000.00
5	AI/IASST/GEN/003/2023/5	01/01/2024	6,00,00,000.00
6	AI/IASST/SAL/003/2023/1	06/04/2023	2,97,00,000.00
7	AI/IASST/SAL/003/2023/2	26/06/2023	3,20,00,000.00
8	AI/IASST/SAL/003/2023/3	26/09/2023	3,31,00,000.00
9	AI/IASST/SAL/003/2023/4	01/01/2024	3,30,00,000.00
10	AI/IASST/CAP/003/2023/1	06/04/2023	2,69,00,000.00
11	AI/IASST/CAP/003/2023/2	26/06/2023	2,25,00,000.00
12	AI/IASST/CAP/003/2023/3	26/09/2023	2,40,00,000.00
13	AI/IASST/CAP/003/2023/4	01/01/2024	2,00,00,000.00
Total G.I.A. received (Gross)			38,27,00,000.00
Less:	G.I.A. Refunded through TSA		
	Refund to RBI	31/03/2024	90,20,190.00
	Refund to RBI	31/03/2024	22,968.00
	Refund to RBI	30/03/2024	15,439.00
Total (G.I.A. refund)			90,58,597.00
Total G.I.A. Received (Net)			37,36,41,403.00


 निदेशक / Director
 आई.एस.एस. टे. पाश्चिम बोरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी-35:असम:भारत
 Guwahati-781035 Assam India


 Registrar
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35




 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GUWAHATI- 781035

BALANCE SHEET OF DST GENERAL FUND AS ON 31ST MARCH, 2024

PARTICULARS	Schedule	Amount (₹) 2023-24
<u>CAPITAL FUND & LIABILITIES</u>		
Corpus/Capital Fund	1	71,03,51,346.78
Reserves & Surplus	2	0.00
Earmarked/ Endowment Funds	3	0.00
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	16,28,30,854.95
TOTAL :		87,31,82,201.73
<u>ASSETS</u>		
Fixed Assets	8	69,92,18,861.97
Investments - From Earmarked/Endowment Funds		0.00
Investments - Others (FDR)		0.00
Current Assets, Loans and Advances	9	17,39,63,339.76
Miscellaneous Expenditure (To the extent not written off or adjusted)		0.00
TOTAL :		87,31,82,201.73
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25	

In terms of our report of even date annexed hereto.

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No. 327864E

(CA PRIYA AGARWAL)
Partner
Membership No. 318728
Place : Guwahati
Date : 25-06-2024
UDIN : 24318728BKESEM6423

Institute of Advanced
Study in Science & Technology
Paschim Boragaon Guwahati-35

Signature of Director
IASST, Paschim Boragaon
Guwahati-35 Assam India

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

INCOME AND EXPENDITURE ACCOUNT OF DST GENERAL FUND FOR THE YEAR ENDED 31ST MARCH 2024

PARTICULARS	Schedule	Amount (₹) 2023-24
INCOME		
Income from Sales/Services	10	0.00
Grant/Subsidies	11	28,02,56,842.00
Fees/Subscriptions	12	0.00
Income from Investments (Income on Invest. From earmarked/endow. Funds transferred to Funds)	13	0.00
Income from Royalty, Publication, etc.	14	0.00
Interest earned	15	1,60,956.00
Other Income	16	10,19,954.92
Increase/(decrease) in stock of Finished goods and work-in-progress	17	0.00
TOTAL (A) :		28,14,37,752.92
EXPENDITURE		
Establishment Expenses	18	12,66,87,766.00
Other Administrative Expenses, etc.	19	15,18,22,919.85
Expenditure on Grants, Subsidies, etc.	20	0.00
Interest	21	0.00
TOTAL (B) :		27,85,10,685.85
Balance being excess of Income over Expenditure(A-B)		29,27,067.07
Transfer to / from General Reserve		0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		29,27,067.07
SIGNIFICANT ACCOUNTING POLICIES	22	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	23	

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)
Partner
Membership No. 318728
Place : Guwahati
Date : 25-06-2024
UDIN : 245187280KESE416423


 Director
 Institute of Advanced Study in Science & Technology
 IASST, Paschim Boragaon
 Guwahati-781035 Assam India

 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 01/04/2023 TO 31/03/2024 (DST CORE FUND)

Receipt	Amount	Amount	Payment	Amount	Amount
Opening Balance		5335926.79	Establishment		127498492.00
(if two types accounts)	5335926.79		Salary	88948159.00	
Grants-In-Aid		362700000.00	N.P.S. Contribution	19646641.00	
Revenue Grant	289300000.00		Gratuity	4220579.00	
Capital Grant	82400000.00		Children Education Allowances	1026000.00	
			Medical Expenses	4458178.00	
Interest Received		403949.00	Leave Travel Concession	785916.00	
Bank Interest received (Other)	47955.00		Leave Encashment (Retirement)	6332125.00	
Bank Interest received (Refundable to DST)	355994.00		Telephone, Internet & Newspaper	443187.00	
			Uniform Allowances	30000.00	
Other Income		48361.92	Incentive for Promoting official Hindi Language	55530.00	
Interest on FD	42652.00		Leave Salary Contribution	329800.00	
Other Received	9709.92		Pension Contribution	692055.00	
			Administrative Expenses/ Expenses on Grant		149626802.35
			Contingency	20912089.15	
			Consumables	10313744.00	
			Works & Service	18962811.00	
			Fellowship to Scholars/SPDI	34483850.00	
			Salary to Contractual Staff	42511712.00	
			Institutional Project	8809971.00	
			Security Expenses	11478013.00	
			Training & Conference	845706.00	
			Travel	1906906.00	
			Expenditure on Fixed Assets & Capital WIP		93819261.56
			Building	22110117.00	
			Books & Journal	955500.00	
			Furniture & Fixtures	1844966.00	
			Equipment	65520517.56	
			Machinery & Tools	1918606.00	
			Air Conditioner	163996.00	
			Computer & Peripherals	1305479.00	
			Other Payments		10265481.80
			Bank Interest (Refundable to DST)	1208884.00	
			Grant-in-aid refund through TSA/Revenue	9041158.00	
			Grant-in-aid refund through TSA/Capital	15439.00	
			Closing Balance:		7278200.80
			a) Cash in hand	0.00	
			b) Bank Balances		
			i) In current accounts		
			ii) In deposit accounts		
			iii) Savings accounts	7278200.80	
	388488237.71	388488237.71		388488237.71	388488237.71

For BIDAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No. 327864E

(CA BIDAY AGARWAL)
Partner
Membership No. 358726
Place: Guwahati

Director
IASST, Paschim Boragaon
Guwahati-781035, Assam, India

Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Details of Income & Expenditure

Details 1: Salary and Allowances:

Amount(₹)
2023-24

General Fund:	
Salary & Allowances	8,77,04,540.00
NPS	1,86,46,643.00
Pension Contribution	6,92,055.00
Gratuity	42,20,579.00
Leave Salary Contribution	2,93,687.00
Leave Encashment (Retirement)	63,32,125.00
LTC	12,55,342.00
Children Education	10,26,000.00
Medical Expenses	44,58,328.00
Incentive for Promoting official Hindi Language	5,35,300.00
Telephone, Internet & Newspaper	4,43,187.00
Allowances and Bonus	
Uniform Allowances	80,000.00
	12,66,87,766.00

Details 2: Contingency Expenses:

Amount(₹)
2023-24

General Fund:	
Advertisement	16,91,991.00
Animal Welfare	95,918.00
Audit Fees	82,600.00
Postage	79,586.00
Electricity & Power	1,60,54,417.22
Telephone Charges	51,786.00
Repairs & Maintenance - Vehicle	17,58,826.00
Printing & Stationery	26,07,808.00
Hospitality	18,12,655.00
Conveyance	55,754.00
A.I Directors Conclave 2024	16,65,493.00
Staff & Student Welfare	12,000.00
Meeting Expenses	12,86,030.00
Professional & Legal Fees	8,69,470.00
Newspapers & Periodicals	50,321.00
Paper Publication Charge	46,635.00
Sitting Fees	6,69,300.00
Bank Charges	8,475.35
	2,46,95,195.57

Details 3: Laboratory Consumables:

Amount(₹)
2023-24

General Fund:	
Laboratory Gas Refilling	14,06,353.00
Chemicals & Glassware	99,49,196.28
Sample Analysis	4,25,679.00
Renewal/Other Fee Payments	20,63,041.00
Experimental Animal Maintenance	2,15,311.00
	1,00,59,580.28

Signature of Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India



Signature of Director
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-781035

Signature of Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Details of Income & Expenditure

Details 4 : Works & Services :	Amount() 2023-24
General Fund :	
Repairing & Maintenance (General)	1,35,42,542.00
Repairing & Maintenance (Equipment)	1,57,84,790.00
Outsourcing of Manpower Services	1,30,23,715.00
Gardening & Landscaping	73,255.00
	4,04,26,302.00

Details 5 : Institutional Projects :	Amount() 2023-24
General Fund :	
Schedule - 22	
Continuation of Institutional Bioinformatics Int.	99,588.00
Empowerment of Sc/St People Horticulture at Rani	11,400.00
Institutional Contribution to BIONEST Project	5,36,030.00
Institutional Project Adsorption, Degradation, Price	7,99,458.00
Institutional Project Application of Cold... Vitro	4,75,229.00
Institutional Project Developing Functional...Appli	3,93,631.00
institutional project Development of Msure and Xene-based composites	1,41,860.00
Institutional Project Dev. of Graphene Oxide...Reme	92,716.00
Institutional Project Doped SnS2 Nanostructure. Spl	3,53,742.00
Institutional Project Evaluation of Structure, Morph	2,99,883.00
Institutional Project Experimental Investigation	1,91,939.00
institutional Project Exploration of actinomycetia prevalent plant pathogens	3,47,898.00
Institutional Project Exploration of Endophyte, Tea	60,660.00
Institutional Project Exploration of Traditionally	5,04,577.00
Institutional Project Fine Pectinolate...Method	20,017.00
Institutional project Helium induced instability	4,04,152.00
Institutional Project Interaction Study of...Experim	3,18,367.00
Institutional Project Mathematical Modelling, Strat	10,798.00
Institutional Project Natural and synthetic inhibitors	4,49,659.00
Institutional Project Phosphorene Biophore Based	1,74,324.00
Institutional Project Plasma Treatment of Titanium	1,98,528.00
Institutional Project Polymer Composite Thin...S Kundu	5,99,352.00
Institutional Project Preclinical Evaluation	4,49,887.00
Institutional Project Proteomic and structural analysis infected Muga silkworm	2,21,094.00
Institutional Project Seasonal Dynamics of Organic	1,46,403.00
Institutional Project Studies of Neuroprotective...C	6,60,277.00
Institutional Project Studies of Waves Plasma	8,580.00
Institutional Project Studies on the Potency of Nat	3,87,987.00
Institutional Project Study of Few Polyelectrolytes	28,674.00
Institutional Project Study on Charge Extraction	73,278.00
Institutional Project Study on Pyro-Photonic...Ma	2,97,974.00
	87,59,887.00


 Director
 IASST, Paschim Boragaon
 Guwahati-781035, Assam, India


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

		(Amount - Rs.)
<u>SCHEDULE 1 - CORPUS/CAPITAL FUND</u>		<u>Current Year</u>
Balance as at the beginning of the year		66,79,14,135.15
Add : Contributions towards Corpus/Capital fund	12,96,21,207.56	
Add : Nominal value of land not considered in earlier year		1.00
Audit Report now accounted for as per contra		
Add/(Deduct) : Balance of Net Income/(Expenditure) transferred	29,27,067.07	
Less : Depreciation for the year	9,01,11,064.00	4,24,37,211.63
		<u>71,03,51,346.78</u>




 निदेशक Director
 आई ए एस आई टी, पश्चिम बड़गाँव
 IASST, Paschim Boragaon
 गुवाहाटी- 35 असम भारत
 Guwahati-781035 Assam India

6


 निदेशक
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

<u>SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS:</u>		(Amount - Rs.)	
		<u>Current Year</u>	
A. <u>CURRENT LIABILITIES</u>			
1. Acceptances			0.00
2. Sundry Creditors:			
a). For Goods	-		
b). Others	16,319.00	16,319.00	
3. Advances Received			0.00
4. Interest accrued but not due on:			
a). Secured Loans/Borrowings	0.00		
b). Unsecured Loans/Borrowings	0.00	0.00	
5. Statutory Liabilities:			
a). Overdue	0.00		
b). Professional Tax	34,184.00		
c). GST	4,122.00	38,306.00	
6. <u>Other Current Liabilities:</u>			
Unutilised Grant in Aid	15,01,82,722.95		
Security Deposit/EMD	81,15,588.00		
Other Current Liabilities	20,44,774.00	16,03,43,084.95	
	Total (A)	16,03,97,709.95	
B. <u>PROVISIONS</u>			
1. For Taxation			0.00
2. Gratuity			0.00
3. Superannuation/Pension			0.00
4. Accumulated Leave Encashment			0.00
5. Trade Warranties/Claims			0.00
6. Others		24,33,145.00	
	Total (B)	24,33,145.00	
	Total (A+B)	16,28,30,854.95	


 निदेशक / Director
 आई.ए.एस.टी.एस.टी., पश्चिम बोरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी- 35, असम, भारत
 Guwahati-781035 Assam, India




 7
 Financial Officer
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GULWAHATI-781035

SCHEDULE - 8 :

= FIXED ASSETS =

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01-04-23	Additions/(Deletion) >180 days <180 days		Total	Depreciation	W.D.V on 31-03-24
Block "A" : 10%						
Land	1.00	0.00	0.00	1.00	0.00	1.00
Block "B" : 10%						
Building	43,30,23,759.66	88,01,143.00	1,24,16,640.00	45,42,41,542.66	4,48,03,322.00	40,94,38,220.66
Furniture & Fixtures	3,76,32,397.00	5,80,493.00	12,13,691.00	3,94,26,581.00	38,81,974.00	3,55,44,607.00
Block "C" : 15%						
Equipments	16,93,07,402.73	1,89,98,093.56	8,29,84,270.00	27,12,89,766.29	3,44,69,645.00	23,68,20,121.29
Air Conditioner	44,46,474.00	2,80,002.00	37,081.00	47,63,557.00	7,11,792.00	40,51,805.00
Refrigerator	4,791.00	0.00	0.00	4,791.00	719.00	4,072.00
Projector	34,954.00	0.00	0.00	34,954.00	5,243.00	29,711.00
Vehicles	10,45,349.00	0.00	0.00	10,45,349.00	1,56,802.00	8,88,547.00
Plant and Machinery	14,98,745.00	3,83,258.00	16,15,767.00	34,97,770.00	4,03,483.00	30,94,287.00
Block "D" : 40%						
Library	24,86,446.00	0.00	9,55,980.00	34,42,026.00	11,85,694.00	22,56,332.00
Computer	1,02,28,100.02	6,50,167.00	7,05,022.00	1,15,83,289.02	44,92,311.00	70,90,978.02
Printer & Xerox Machine	156.00	0.00	0.00	156.00	62.00	94.00
Computer Software	143.00	0.00	0.00	143.00	57.00	86.00
	65,97,08,717.41	2,96,93,156.56	9,99,28,057.00	78,93,29,924.97	9,01,11,064.00	69,92,18,861.97

For Director
IASST, Paschim Boragaon
Gauhati-781035 Assam India

For Finance & Accounts Officer
IASST, Paschim Boragaon
Gauhati-781035

For Finance & Accounts Officer
IASST, Paschim Boragaon
Gauhati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 9 - CURRENT ASSETS, LOANS, ADVANCES ETC.

	(Amount - Rs.)	
A. CURRENT ASSETS:	Current Year	
1 <u>Inventories:</u>		
a) Stores and Spares	0.00	
b) Loose Tools	0.00	
c) <u>Stock-in-trade:</u>		
Finished Goods	0.00	
Work-in-progress	0.00	
Raw Materials	0.00	0.00
2 <u>Sundry Debtors:</u>		
a) Debts Outstanding for a period exceeding six months	0.00	
b) Others	0.00	0.00
3 <u>Cash Balances in Hand:</u> (including cheques/ drafts & imprest)		0.00
4 <u>Bank Balances:</u>		
a) <u>With Scheduled Banks:</u>		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
<u>On Savings Accounts:</u>		
SBI Khanapara Branch	64,40,611.04	
SBI Khanapara Branch - Workshop	4,64,627.83	
Bank of Baroda - Travel	0.00	
SBI Garchuk - International Conference	0.00	
SBI - IASST Corpus Fund	3,72,961.93	72,78,200.80
b) <u>With Non-Scheduled Banks:</u>		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts	0.00	0.00
5 <u>Post Office Savings Accounts:</u>		0.00
Total (A)		72,78,200.80


 Director
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035, Assam, India



9


 Director
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 9 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)

<u>B. LOANS, ADVANCES & OTHER ASSETS:</u>		<u>(Amount - Rs.)</u>	
		<u>Current Year</u>	
1	<u>Loans:</u>		
	a) Staff	23,02,201.00	
	b) Other entities engaged in activities/objectives similar to that of the entity	0.00	
	c) Others	0.00	23,02,201.00
2	<u>Deposits, advances and other amounts recoverable in cash or in kind or for value to be received:</u>		
	a) On Capital Account	0.00	
	b) TDS Receivable	1,17,824.00	
	c) Security Deposit	18,27,314.00	
	d) Others	0.00	
	Advances against Expenditure of Grants	1,79,07,755.96	
	Advances against Fixed Assets	14,45,30,044.00	16,43,82,937.96
3	<u>Income Accrued:</u>		
	a) On Investments from Earmarked/Endowment Funds	0.00	
	b) On Investments - Others	0.00	
	c) On Loans & Advances	0.00	
	d) Others (includes income due unrealised - Rs. _____)	0.00	0.00
4	<u>Claims Receivable</u>		0.00
	Total (B)	16,66,85,138.96	
	Total (A+B)	17,39,63,339.76	


 Director
 आई.ए.एस.ए.टी., पश्चिम बरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी-35 असम भारत
 Guwahati-781035 Assam India



10


 Finance & Accounts Officer
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-35


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

(Amount - Rs.)
Current Year

SCHEDULE 11 - GRANTS/SUBSIDIES

(Irrevocable Grants & Subsidies Received)

1) Central Government (Salary & General Grant)		
Amount Received during the year	28,93,00,000	
Less : Grant Refunded through TSA	90,43,158	28,02,56,842.00
2) State Government (s)		0.00
3) Government Agencies		0.00
4) Institutions/Welfare Bodies		0.00
5) International Organisations		0.00
6) Others		0.00
Total		28,02,56,842.00




निदेशक / Director
आई.एस.एस.टी., पश्चिम बरगाँव
IASST, Paschim Boragaon
गुवाहाटी-35, असम, भारत
Guwahati-781035 Assam India


Registrar
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-35


Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

	<u>(Amount - Rs.)</u>
	<u>Current Year</u>
<u>SCHEDULE 15 - INTEREST EARNED</u>	
1) On Term Deposits:	
a) With Scheduled Banks	1,13,001.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
2) On Savings Accounts:	
a) With Scheduled Banks	47,955.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
3) On Loans:	
a) Employees/Staff	0.00
b) Others	0.00
4) Interest on Debtors and Other Receivables	0.00
Total	<u><u>1,60,956.00</u></u>


 Director
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 Guwahati-781035 Assam, India


 Director
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-781035


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 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

SCHEDULE 16 - OTHER INCOME

	(Amount - Rs.)	
	<u>Current Year</u>	
1) Profit on Sale/ Disposal of Assets:		
a) Owned Assets	0.00	
b) Assets acquired out of grants, or received free of cost	0.00	
2) Export Incentives Realised	0.00	
3) Fees for Miscellaneous Services	0.00	
4) <u>Miscellaneous Income</u>		
Penal Interest	0.00	
Bus Fare	0.00	
Hostel Accomodation	0.00	
Other	10,19,954.92	
Licence Fees	0.00	
	<u>10,19,954.92</u>	
Total	<u><u>10,19,954.92</u></u>	

SCHEDULE 18 - ESTABLISHMENT EXPENSES

a) Salaries & Allowances	8,77,04,540.00
b) Other Allowances & Bonus	11,06,000.00
c) Contribution to Provident Fund	0.00
d) Contribution to Pension Fund	2,03,38,698.00
e) Staff Welfare Expenses	0.00
f) Expenses on Employees' Retirement and Terminal Benefits	1,05,52,704.00
g) Others	69,85,824.00
Total	<u><u>12,66,87,766.00</u></u>


 Director
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon
 Guwahati-781035 Assam India


 Director
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon Guwahati-781035


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

SCHEDULE 19 - OTHER ADMINISTRATIVE EXPENSES ETC.

	<u>(Amount - Rs.)</u>
	<u>Current Year</u>
a) Contingency Expenses	2,88,95,185.57
b) Works and Services	4,04,26,102.00
c) Laboratory Consumables	1,00,39,580.28
d) Institutional Projects	87,59,847.00
e) Training and Conference	11,13,054.00
f) Travelling and Conveyance Expenses	19,49,396.00
g) Security Services	1,27,58,760.00
h) Workshop & Conference	8,68,782.00
i) Salary (Contractual Employees)	1,25,10,179.00
j) Fellowship (JRF/SRF/IPDF)	3,44,82,034.00
Total	<u>15,18,22,919.85</u>


 निदेशक, Director
 आई.ए.एस.एस.टी., पश्चिम बरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी- 35: असम-भारत
 Guwahati-781035 Assam India




 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35


 Finance & Accounts Officer
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 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED 31ST MARCH 2024

SCHEDULE 20 - EXPENDITURE ON GRANT, SUBSIDIES ETC.

(Amount - Rs.)

Current Year

- a)
- Grants given to Institutions/ Organisations (DST)

Contingency Expenses

Laboratory Consumables

1

Works and Services

100

Institutional Projects

10

b) Subsidies given to Institutions/ Organisations :-

0.00

Total

0.00

Director
 ASST. Pancham Boragaon
 Guwahati-781035 Assam India



Regency
Institute of Advanced
Study in Science & Technology
Prestige, Bhopal, Guwahati-75

Finance & Accounts Officer
IASET, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GUWAHATI- 781035

*** SCHEDULE " 24 " : SIGNIFICANT ACCOUNTING POLICES :**

1. ACCOUNTING CONVENTION :

The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of accounting.

2. REVENUE RECOGNITION :

(a) Income on Interest bearing securities and Term Deposits is recognised on accrual basis as and when these are realised.

(b) Income other than Interest Income are recognised on Cash Basis.

3. INVESTMENTS :

Term deposits with Banks are taken as Investments and valued at accrual basis.

4. FIXED ASSETS :

- Fixed Assets are stated at cost of acquisition, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition less depreciation.

5. DEPRECIATION :

(a) Depreciation on Fixed assets purchased/acquired/ constructed out of Government Grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

(b) Depreciation is charged to Capital Fund by way of reducing the net value of Fixed Assets.

6. GOVERNMENT GRANTS/SUBSIDIES :

(a) Revenue Grants are shown as income on realisation basis and expenditure thereof is charged to appropriate revenue heads. In the case Capital Grant, the Capital Fund is credited to the extent of the amount of acquisition of Fixed Assets.

(b) During the Financial Year, the Institute received Grant-in-Aid through Tressury Single Account (TSA) mode. The remaining unutilised grants as on 31 Mrach, 2024 has returned back automatically to TSA as per new revised procedure of fund flow system.


 Director
 IASST, Paschim Boragaon
 Guwahati-781035 Assam, India


 Institute Officer
 Institute of Advanced Study in Science & Technology
 Paschim Boragaon, Guwahati-781035




 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI- 781035

16

SCHEDULE * 25 * : CONTINGENT LIABILITIES & NOTES ON ACCOUNTS :

- (i) No provision has been made in respect of Leave Salary.
- (ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.
- (iii) In the opinion of the Management, the Current Assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.
- (iv) Balances under Current Liabilities, Loans and Advances are subject to conformation / reconciliation / adjustments, if any.
- (v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.
- (vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.
- (vii) Bank Interest received in SBI Khanapara during the year is not recognised as Income instead shown as Current Liability because it will be refunded to DST, Govt. of India.
- (viii) Any surplus balance that remains in Income & Expenditure A/c after adjusting the expenditure with the income is transferred to Capital/Corpus Fund.
- (ix) TDS of Rs 5000/- of Premium Serums and Vaccines Pvt Ltd has not been considered in books of accounts as the gross amount was credited to SBI Khanapara Branch Workshop on 01.01.2024
- (x) TCS of Rs 343/- of Bruker India Scientific Pvt Ltd has not been considered in books of accounts since the management was unable to provide the details of payment made to the party where such TCS amount has also been paid.
- (xi) As discussed by the management Nominal Value of Rs 1 has been shown in Land to comply with the requirement of C&AG Auditor and the same has been adjusted in Capital Fund Account as prior period adjustment.

निदेशक / Director
आई.एस.एस.टी. पश्चिम बरगाँव
IASST, Paschim Boragaon
गुवाहाटी- 35-अरुण-भारत
Guwahati-781035 Assam India



Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

<u>Annexure "A" - Unutilised Grant</u>	<u>Amount(₹)</u>
Opening Balance	18,64,19,369.51
- Add : Capital Grant received during the year	9,34,00,000.00
Less : Contribution towards Capital Fund (Addition to Fixed Assets)	27,98,19,369.51
Less : Refund of Grant through TSA (Capital Grant)	12,96,21,207.56
Less : Unutilized Revenue Grant for the year	15,439.00
Closing Balance	15,01,82,722.95

<u>Annexure "B" - Security Deposit/EMD</u>	<u>Amount(₹)</u>
Security Deposits (Works)	77,15,588.00
Earnest Money	4,00,000.00
	81,15,588.00

<u>Annexure "C" - Other Current Liabilities</u>	<u>Amount(₹)</u>
Bank Interest Refundable to DST, Govt. of India	3,55,994.00
Donation to PM Care Fund	-
EPF Payable	35,875.00
Festival Advance Refundable	-
Payable to Extramural Projects	75,781.00
Benevolent Fund	-
CM Relief Fund	-
IASST Misc Account	15,49,583.00
NPS Contribution (Employer)	16,065.00
NPS Contribution (Employee)	11,476.00
	20,44,774.00




 Director
 The Institute of Advanced Study in Science and Technology
 Paschim Boragaon
 Guwahati-781035 Assam India


 Registrar
 Institute of Advanced Study in Science and Technology
 Paschim Boragaon, Guwahati-781035


 Finance & Accounts Officer
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 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Annexure "D" - Advance against expenditure on grant : **Amount(₹)**

Current year unadjusted advance :

Salary (Against House Building)	21,81,668.00	
Salary (Other Advance)	1,20,533.00	
Institutional Project	1,01,316.00	
Contingency	13,21,210.00	
Works and Services	14,83,703.00	
Advance to Extramural Project	-	
Training	-	
Consumables	2,38,906.00	54,47,336.00

Earlier years unadjusted advance :

Salary	52,20,839.00	
Contingency	3,35,698.00	
Training & Conference	8,78,852.00	
Institutional Project	19,116.00	
Works and Services	63,77,002.96	
Other	21,093.00	
Advance to Extramural Project	1,29,132.00	
Consumables	17,80,888.00	1,47,62,620.96

TOTAL : **2,02,09,956.96**

Annexure "E" - Advance against Fixed Assets : **Amount(₹)**

Current year unadjusted advance :

Equipment	3,32,72,000.00	
Building	11,42,776.00	
Computer & Peripherals	-	
Books & Journals	-	3,44,14,776.00

Earlier years unadjusted advance :

Equipment	2,62,08,376.00	
Building	8,26,17,800.00	
Furniture & Fixtures	34,324.00	
Plant & Machinery	-	
Development of BCH	-	
Construction of Director Quarter	-	
Dedicated Power Supply	-	
Computer & Peripheral	12,54,768.00	11,01,15,268.00

14,45,30,044.00


Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India




Director
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035


Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

BALANCE SHEET OF Miscellaneous, SSH, Benevolent & Corpus Fund
AS ON 31ST MARCH, 2024

PARTICULARS	Schedule	Amount (₹) 2023-24
<u>CAPITAL FUND & LIABILITIES</u>		
Corpus/Capital Fund	1	10,77,57,906.43
Reserves & Surplus	2	26,172.00
Earmarked/ Endowment Funds	3	0.00
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	70,65,239.64
TOTAL :		11,48,49,318.07
<u>ASSETS</u>		
Fixed Assets	8	3,47,31,989.45
Investments - From Earmarked/ Endowment Funds	9	0.00
Investments - Others	10	7,06,55,899.00
Current Assets, Loans and Advances	11	94,41,429.62
Miscellaneous Expenditure (To the extent not written off or adjusted)		0.00
TOTAL :		11,48,49,318.07
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25	

In terms of our report of even date annexed hereto.

For **BIJAY AGARWAL & CO.**
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)

Partner

Membership No. 318728

Place : Guwahati

Date : 25-06-2024

UDIN : 24047288KESEM6423


Signature
Institution
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-781035

Signature
Secretary, Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Signature
Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI-781035
CONSOLIDATED INCOME & EXPENDITURE ACCOUNT OF Miscellaneous, SSH, Benevolent & Corpus
Fund FOR THE YEAR ENDED 31ST MARCH 2024

PARTICULARS	Schedule	Amount (₹) 2023-24
INCOME		
Income from Sales/Services	12	0.00
Grant/Subsidies	13	0.00
Fees/Subscriptions	14	0.00
Income from Investments (Income on Invest. From earmarked/endow. Funds transferred to Funds)	15	0.00
Income from Royalty, Publication, etc.	16	0.00
Interest earned	17	73,66,401.00
Other Income	18	1,48,31,189.04
Increase/(decrease) in stock of Finished goods and work-in-progress	19	0.00
TOTAL (A) :		2,21,97,590.04
EXPENDITURE		
Establishment Expenses	20	0.00
Other Administrative Expenses, etc.	21	18,24,406.77
Expenditure on Grants, Subsidies, etc.	22	0.00
Interest	23	0.00
TOTAL (B) :		18,24,406.77
Balance being excess of Income over Expenditure (A-B)		2,03,73,183.27
Transfer to / from General Reserve		0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		2,03,73,183.27
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25	

For BIJAY AGARWAL & CO.
 CHARTERED ACCOUNTANTS
 Firm Registration No.327864E

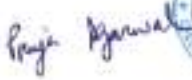
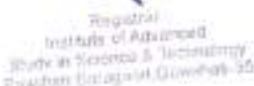
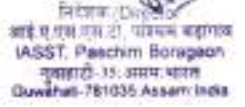
(CA PRIYA AGARWAL)
 Partner
 Membership No.318728
 Place : Guwahati
 Date : 25-06-2024
 UDIN : 24318728 SKESM6423



REPORT BY
 INSTITUTE OF ADVANCED
 STUDY IN SCIENCE & TECHNOLOGY
 Paschim Boragaon, Guwahati-781035

[Signature]
 Director
 IASST, Paschim Boragaon
 Guwahati-35 (Assam) India
 Guwahati-781035

[Signature]
 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY PASCHIM BORAGAON, GARCHUK, GUWAHATI-781035			
CONSOLIDATED RECEIPTS & PAYMENTS ACCOUNT OF Miscellaneous, SSH, Benevolent & Corpus Fund FOR THE YEAR ENDED 31ST MARCH 2024			
RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
I Opening Balances:		I EXPENSES:	
a) Cash in hand	0.00	a) Establishment Expenses	0.00
b) Bank Balances		b) Administrative Expenses/ Expenses on Gr	30,95,700.00
i) In current accounts	0.00	II Payments made against funds for various projects	0.00
i) In deposit accounts	0.00		
i) Savings accounts	36,14,380.94		
	36,14,380.94		
II Grants Received		III Investments and deposits made	
a) From Government of India	0.00	a) Out of Earmarked/ Endow. Funds	0.00
b) From State Government	0.00	b) Out of Own Funds	1,50,00,000.00
c) From other sources (details) (Grants for capital & revenue exp. to be shown separately)	0.00		
III Employees Benevolent Fund	14,640.00	IV Expenditure on Fixed Assets & Capital WIP	
IV Interest Received		a) Purchase of Fixed Assets	0.00
a) On Bank deposits	2,69,648.00	b) Expenditure on Capital WIP	0.00
b) Loans, Advances, etc.	0.00		
	2,69,648.00	V Refund of Surplus money/loans	
V Other Income		a) To the Government of India	0.00
Other Income	1,97,82,297.68	b) To the State Government	0.00
Misc Dues	16,69,319.00	c) To other providers of Funds	0.00
	2,14,51,616.68	VI Finance charges (Interest)	0.00
VI Amount Borrowed	0.00	VII Other Payments	
VII Any Other receipts	0.00	Bank Charges	-
		Loans and Advances	-
		* CLOSING BALANCE:	
		a) Cash in hand	0.00
		b) Bank Balances	
		i) In current accounts	0.00
		i) In deposit accounts	0.00
		i) Savings accounts	72,54,585.62
			72,54,585.62
	2,53,50,285.62		2,53,50,285.62
For BIJAY AGARWAL & CO. CHARTERED ACCOUNTANTS Firm Registration No.327864E			
(CA PRIYA AGARWAL) Partner Membership No. 318728 Place : Guwahati Date : 29-06-2024			
       			

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

(Amount - Rs.)
Current Year

SCHEDULE - 1 : :: CORPUS/CAPITAL FUND ::

Part A Capital Fund

Balance as at the beginning of the year	4,67,90,500.36	
Add : Contribution towards Corpus/Capital Fund	0.00	
Less : Depreciation for the year	41,22,566.00	4,26,67,934.36

Part B Corpus Fund

Balance as at the beginning of the year	4,47,16,788.80	
Add : Balance of net income/(expenditure) transferred from the Income and Expenditure Account	2,03,73,183.27	6,50,89,972.07
		10,77,57,906.43

SCHEDULE - 2 : :: RESERVES & SURPLUS ::

Current Year

1. Capital Reserve

As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00

2. Revaluation Reserve

As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00

3. Special Reserve -IASST Employees Benevolent Fund (664178)

As per Last Account	11,532.00	
Addition during the year	14,640.00	
Less: Deductions during the year	0.00	26,172.00

4. General Reserve

As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00


 Finance Officer
 ৪০৫,৭০৫,৭০৫,৭০৫
 IASST, Paschim Boragaon
 গুৱাহাটী-৩৫ অসম-ভাৰত
 Guwahati-781035 Assam India


 Registrar
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-781035


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS: (Amount - Rs.)

		<u>Current Year</u>
A. CURRENT LIABILITIES		
1. Acceptances		0.00
2. Sundry Creditors:		
a). For Goods	0.00	
b). Others	47,259.00	47,259.00
3. Advances from Extramural Projects	61,34,233.00	61,34,233.00
4. Interest accrued but not due on:		
a). Secured Loans/Borrowings	0.00	
b). Unsecured Loans/Borrowings	0.00	0.00
5. Statutory Liabilities:		
a). Overdue	0.00	
b). Others	0.00	
c). GST	19512.64	19,512.64
6. <u>Other Current Liabilities:</u>		
a). Security Deposit (Misc.)	5,49,800.00	
b). Earnest Money (Misc./Overhead)	3,10,614.00	
c). Payable to Core fund	3,821.00	8,64,235.00
	Total (A)	70,65,239.64
B. PROVISIONS		
1. For Taxation		0.00
2. Gratuity		0.00
3. Superannuation/Pension		0.00
4. Accumulated Leave Encashment		0.00
5. Trade Warranties/Claims		0.00
6. Others		0.00
	Total (B)	0.00
	Total (A+B)	70,65,239.64

Director
IASST, Paschim Boragaon
Guwahati-35, Assam, India
Guwahati-781035, Assam, India



5

Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-35

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035
SCHEDULE - 8 :
= FIXED ASSETS =

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01-04-23	Additions/(Deletion)		Total	Depreciation	W.D.V on 31-03-24
		≥180 days	<180 days			
Block "A" : 10%						
Building	3,38,72,422.00	0.00	0.00	3,38,72,422.00	33,87,242.00	3,04,85,180.00
Furniture & Fixtures	2,99,921.45	0.00	0.00	2,99,921.45	29,992.00	2,69,929.45
Block "C" : 15%						
Equipments	25,46,152.00	0.00	0.00	25,46,152.00	3,81,923.00	21,64,229.00
Vehicles	21,56,060.00	0.00	0.00	21,56,060.00	3,23,409.00	18,32,651.00
	3,88,74,555.45	0.00	0.00	3,88,74,555.45	41,22,566.00	3,47,51,989.45

6



[Signature]
 Director
 IASST, Paschim Boragaon
 Guwahati-35, Assam India
 Guwahati-781035 Assam India

[Signature]
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35

[Signature]
 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

		<u>Current Year</u>
<u>SCHEDULE 10 - INVESTMENTS - OTHERS:</u>		
1. In Government Securities		0.00
2. Other Approved Securities		0.00
3. Shares		0.00
4. Debentures and Bonds		0.00
5. Subsidiaries & Joint Ventures		0.00
6. Others - Investment in FDR		
Opening Balance	5,34,71,798.00	
Add: Current Year Investment (Net)	3,50,00,000.00	
Add: Current Year Interest	23,99,079.00	
Less : TDS	2,14,978.00	
Less: FDR Maturity	2,00,00,000.00	7,06,55,899.00
	Total	<u>7,06,55,899.00</u>


 निदेशक / Director
 आई.ए.एस.टी. पश्चिम बरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी-35 (असम, भारत)
 Guwahati-781035 Assam India




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 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC.

		(Amount - Rs.)
<u>A. CURRENT ASSETS:</u>		<u>Current Year</u>
1	<u>Inventories:</u>	
a)	Stores and Spares	0.00
b)	Loose Tools	0.00
c)	<u>Stock-in-trade:</u>	
	Finished Goods	0.00
	Work-in-progress	0.00
	Raw Materials	0.00
		0.00
2	<u>Sundry Debtors:</u>	
a)	Debts Outstanding for a period exceeding six months	0.00
b)	Others	0.00
		0.00
3	<u>Cash Balances in Hand:</u> (including cheques/ drafts & imprest)	0.00
4	<u>Bank Balances:</u>	
a)	<u>With Scheduled Banks:</u>	
	On Current Accounts	0.00
	On Deposit Accounts (including margin money)	0.00
	<u>On Savings Accounts</u>	
	SBI - IASST Employees Benevolent Fund	40,703.00
	SBI - Students & Scientist Home (IASST)	2,99,565.82
	Vijaya Bank - Overhead/Miscellaneous	69,14,316.80
		72,54,585.62
b)	<u>With Non-Scheduled Banks:</u>	
	On Current Accounts	0.00
	On Deposit Accounts (including margin money)	0.00
	On Savings Accounts	0.00
		0.00
5	<u>Post Office Savings Accounts:</u>	0.00

Total (A)

72,54,585.62


 Institute Director
 অসম গৱেষণা আৰু প্ৰযুক্তি
 IASST, Paschim Boragaon
 গুৱাহাটী-৭৮১০৩৫ অসম,ভাৰত
 Guwahati-781035 Assam, India




 Registrar
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-781035


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2024

B. LOANS, ADVANCES & OTHER ASSETS:

	<u>Current Year</u>	
1 <u>Loans:</u>		
a) Staff	0.00	
b) Other entities engaged in activities/objectives similar to that of the entity	0.00	
Empowerment of Tribunal Project	860.00	
Receivable from SC/ST Project	0.00	
Receivable from Core Fund	15,49,583.00	
c) Others (Specify) Security Deposit (SSH)	0.00	15,50,443.00
2 Advances and other amounts recoverable in cash or in kind or for value to be received:		
a) On Capital Account	0.00	
b) Prepayments	0.00	
c) Others	6,36,401.00	6,36,401.00
3 <u>Income Accrued:</u>		
a) On Investments from Earmarked/Endowment Funds	0.00	
b) On Investments - Others	0.00	
c) On Loans & Advances	0.00	
d) Others (includes income due unrealised - Rs.)	0.00	0.00
4 <u>Claims Receivable</u>		0.00
<u>Total (B)</u>		<u>21,86,844.00</u>
<u>Total (A+B)</u>		<u>94,41,429.62</u>


 Registrar
 Institute of Advanced Study in Science and Technology
 Paschim Boragaon, Guwahati-781035, Assam India




 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED ON 31ST MARCH 2024

SCHEDULE 17 - INTEREST EARNED

	(Amount - Rs.)
	<u>Current Year</u>
1) On Term Deposits:	
a) With Scheduled Banks	70,96,753.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
2) On Savings Accounts:	
a) With Scheduled Banks	2,69,648.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
3) On Loans:	
a) Employees/Staff	0.00
b) Others	0.00
4) Interest on Debtors and Other Receivables	0.00
Total	<u>73,66,401.00</u>



(Signature)
 निदेशक/Director
 आई ए एस आर टी, पश्चिम बड़गाँव
 IASST, Paschim Boragaon
 गुवाहाटी-781035-असम, भारत
 Guwahati-781035 Assam India

(Signature)
 Regional
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35

(Signature)
 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED ON 31ST MARCH 2024

SCHEDULE 18 - OTHER INCOME

(Amount - Rs.)

Current Year

1) Profit on Sale/Disposal of Assets:	
a) Owned Assets	0.00
b) Assets acquired out of grants, or received free of cost	0.00
2) Export Incentives Realised	0.00
3) Fees for Miscellaneous Services	0.00
4) Miscellaneous Income	1,48,31,189.04
Total	1,48,31,189.04




 निदेशक, Director
 आई.एस.एस.टी. पश्चिम बरगाँव
 IASST, Paschim Boragaon
 गुवाहाटी-७८१०३५ असम, भारत
 Guwahati-781035 Assam, India


 Institute of Advanced
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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD
ENDED ON 31ST MARCH 2024

SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC.

(Amount - Rs.)
Current Year

a) Hospitality Expenses	17,25,116.77
b) Bank charges	-
c) Printing & Stationery	99,290.00
d) Interest Expenses	0.00
e) NPS	0.00
f) Building & Site Development Expenses	0.00
Total	<u>18,24,406.77</u>


निदेशक - Director
आई.ए.एस.एस.टी., पश्चिम बरगांव
IASST, Paschim Boragaon
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Guwahati-781035 Assam, India



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THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF OVERHEAD/MISCELLANEOUS FUND FOR THE YEAR ENDED 31ST MARCH 2024

RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
To OPENING BALANCE :		By PAYMENT :	
Unspent as on 01/04/2023	32,48,908.12	Extramural Project	12,66,901.00
		Printing & Stationery	99,291.00
* OTHER RECEIPTS :			
Bank Interest	2,49,302.00		
Institute Facility	47,80,243.07	* INVESTMENT :	1,50,00,000.00
Sales/Services	4,88,270.02		
SSH/Guest House	60,24,522.00	* CLOSING BALANCE :	
Security	63,600.00	Unspent as on 31/03/2024	69,14,316.80
Extramural Project	51,91,340.00		
Interest on FDR	46,55,022.00		
Earnest Money Deposits	3,10,614.00		
Other Income	2,68,686.59		
	2,00,31,599.68		
	2,32,80,507.80		2,32,80,507.80

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)
Partner
Membership No. 318728
Place : Guwahati

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

13

Institute of Advanced
Study in Science & Technology
Paschim Boragaon Guwahati-781035

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI- 781035
**RECEIPTS & PAYMENTS ACCOUNT OF STUDENT AND SCIENTIST HOME FUND FOR THE YEAR
ENDED 31ST MARCH 2024**

RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
To OPENING BALANCE :		By PAYMENTS :	
Unspent as on 01/04/2023	3,40,455.82	Hospitality Expenditures	17,29,509.00
* OTHER RECEIPTS :			
Bank Interest	19,300.00		
Mess Dues	16,69,319.00		
	16,88,619.00	* CLOSING BALANCE :	
		Unspent as on 31/03/2024	2,99,565.82
	20,29,074.82		20,29,074.82

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)
Partner
Membership No. 318728
Place : Guwahati



(Signature)
Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

(Signature)
Registrar
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-781035

(Signature)
Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF UPGRADING FUND FOR THE YEAR ENDED 31ST MARCH 2024

RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
To OPENING BALANCE :		By PAYMENT :	
Unspent as on 01/04/2023	0.00	Transfer to DST Core Fund & amount utilized for Building & Site Development Expenditure	0.00
* OTHER RECEIPTS :		" CLOSING BALANCE :	
Bank Interest	0.00	Unspent as on 31/03/2024	0.00
	<u>0.00</u>		<u>0.00</u>

For BIJAY AGARWAL & CO.
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(CA PRIYA AGARWAL)
Partner
Membership No. 318728
Place : Guwahati

निदेशक / Director
आई.ए.एस.एम.टी, पश्चिम बरगाँव
IASST, Paschim Boragaon
गुवाहाटी- 35, असम भारत
Guwahati-781035 Assam India

Registrar
Institute of Advanced
Study in Science & Technology
Paschim Boragaon, Guwahati-35

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI- 781035
**RECEIPTS & PAYMENTS ACCOUNT OF EMPLOYEES BENEVOLENT FUND FOR THE
YEAR ENDED 31ST MARCH 2024**

RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
To OPENING BALANCE :		By EXPENDITURES :	
Unspent as on 01/04/2023	25,017.00	Employees Benevolent Fund	-
* Employees Benevolent Fund	14,640.00	CLOSING BALANCE :	
* Bank Interest	1,046.00	Unspent as on 31/03/2024	40,703.00
	<u>40,703.00</u>		<u>40,703.00</u>

For **BIJAY AGARWAL & CO.**
CHARTERED ACCOUNTANTS
Firm Registration No.327864E

(**CA PRIYA AGARWAL**)
Partner
Membership No. 318728
Place : Guwahati

For
The Institute of Advanced Study in Science & Technology
Paschim Boragaon
Guwahati-781035, Assam India

Signature
The Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI- 781035

SCHEDULE * 24 * : **SIGNIFICANT ACCOUNTING POLICES :**

- * **ACCOUNTING CONVENTION :**
 - * The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of accounting.
- 2. REVENUE RECOGNITION :**
 - (a) Income on interest bearing securities and term deposits is recognised on accrual basis as and when these are realised.
 - (b) Income other than interest income are recognised on cash basis.
- 3. INVESTMENTS :**
 - Term deposits with Banks are taken as investments and valued at accrual basis.
- 4. FIXED ASSETS :**
 - * Fixed Assets are stated at cost of acquisition, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition less depreciation.
- 5. DEPRECIATION :**
 - (a) Depreciation on Fixed assets purchased/acquired/ constructed out of government grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.
 - (b) Depreciation is charged to Capital Fund by way of reducing the net value of fixed assets.

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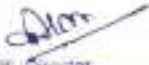


নিৰ্দেশক, Director
আই এ এল এল এল এল, পশ্চিম বোকাগোণ
IASST, Paschim Boragaon
গুৱাহাটী- 35 অসম-ভাৰত
Guwahati-781035 Assam India

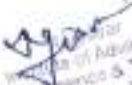
Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI- 781035
SCHEDULE " 25 " : CONTINGENT LIABILITIES & NOTES ON ACCOUNTS :

- (i) No provision has been made in respect of Leave Salary.
- (ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.
- (iii) In the opinion of the Management, the Current Assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.
- (iv) Balances under Current Liabilities, Loans and Advances are subject to conformation / reconciliation / adjustments, if any.
- (v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.
- (vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.
- (vii) Any surplus balance that remains in Income & Expenditure A/c after adjusting the expenditure with the income is transferred to Capital/Corpus Fund.


 निदेशक / Director
 आई.एस.एस.टी. पश्चिम बड़गाँव
 IASST, Paschim Boragaon
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 Guwahati-781035, Assam India




 निदेशक / Director
 Institute of Advanced
 Study in Science & Technology
 Paschim Boragaon, Guwahati-35


 Finance & Accounts Officer
 IASST, Paschim Boragaon
 Guwahati-781035



INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
Paschim Boragaon, Garchuk, Guwahati 781035, Assam